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City Engineer, City of Winnipeg

ANNUAL REPORT

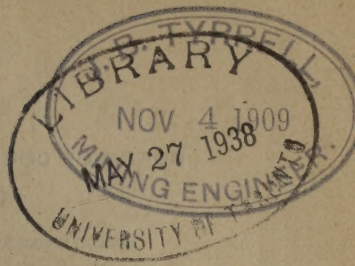
1908

OF THE

CITY ENGINEER

CITY OF WINNIPEG

MANITOBA



CITY COUNCIL, 1908

MAYOR.

Jas. H. Ashdown.

CONTROLLERS.

J. W. Baker.
W. Sanford Evans.

J. G. Harvey.
J. G. Latimer.

ALDERMEN.

Ward 1.

J. C. Gibson.
F. W. Adams.

Ward 4.

A. Eggertson.
W. G. Douglas.

Ward 2.

R. A. C. Manning.
F. O. Fowler.

Ward 5.

J. R. Gowler.
A. A. McArthur.

Ward 3.

Thos. Wilson.
R. T. Riley.

Ward 6.

D. McLean.
F. J. C. Cox.

Ward 7.

J. A. Potter.
Chas. Midwinter.

**BOARD OF CONTROL AND STANDING COMMITTEES OF THE
COUNCIL FOR THE YEAR 1908.**

BOARD OF CONTROL.

Jas. H. Ashdown, Esq. (Mayor) Chairman.
Controller J. G. Harvey, Vice Chairman.
Controller J. W. Baker.
Controller W. S. Evans.
Controller J. G. Latimer.

COMMITTEES

Works & Property.

Ald. D. McLean, Chairman.
" F. W. Adams.
" R. A. C. Manning.
" Thos. Wilson.
" A. Eggertson.
" J. R. Gowler.
" J. A. Potter.
Controller J. G. Latimer.

Health.

Ald. T. Wilson, Chairman.
" J. C. Gibson.
" R. A. C. Manning.
" A. Eggertson.
" A. A. McArthur.
" F. J. C. Cox.
" J. A. Potter.
Controller W. S. Evans.

**Legislation, Reception, Trade &
Commerce.**

Ald. F. J. C. Cox, Chairman.
" F. W. Adams.
" R. A. C. Manning.
" R. T. Riley.
" W. G. Douglas.
" J. R. Gowler.
" C. Midwinter.
Controller W. S. Evans.

Fire, Water & Light.

Ald. F. O. Fowler, Chairman.
" J. C. Gibson.
" R. T. Riley.
" W. G. Douglas.
" A. A. McArthur.
" F. J. C. Cox.
" C. Midwinter.
Controller J. W. Baker.

Market, License & Relief.

Ald. J. R. Gowler, Chairman.
" J. C. Gibson.
" F. O. Fowler.
" R. T. Riley.
" W. G. Douglas.
" D. McLean.
" C. Midwinter.
Controller J. G. Harvey.

Library.

Ald. W. G. Douglas, Chairman.
" J. C. Gibson.
" F. O. Fowler.
" T. Wilson.
" A. A. McArthur.
" D. McLean.
" C. Midwinter.
Controller J. G. Latimer.

COMMITTEES—Continued

Power Committee.

Ald. A. Eggertson, Chairman.

" F. W. Adams.

" F. O. Fowler.

" T. Wilson.

" J. R. Gowler.

" D. McLean.

" J. A. Potter.

Controllers Harvey, Baker, Evans &
Latimer.**Sinking Fund Trustees.**

Ald. F. J. C. Cox.

E. F. Hutchings, Esq.

R. J. Campbell, Esq.

Board Police Commissioners.

Ald. R. T. Riley, Chairman.

His Worship Mayor Ashdown.

His Hon. Judge Walker.

Ald. T. Wilson.

Hon. T. M. Daly, Police Magistrate.

Public Parks Board.

F. W. Drewry, Esq., Chairman.

R. D. Waugh, Esq.

H. C. Stovel, Esq.

D. A. Ross, Esq.

C. W. Sharpe, Esq.

F. W. Handel, Esq.

Ald. D. McLean.

" A. Eggertson.

His Worship Mayor Ashdown.

The Council is represented on the several Local Boards as follows:—

Exhibition Board.

His Worship the Mayor.

Controller J. W. Baker.

" W. S. Evans.

" J. G. Latimer.

" J. G. Harvey.

Ald. F. W. Adams.

" R. A. C. Manning.

" T. Wilson.

" A. Eggertson.

" A. A. McArthur.

" F. J. C. Cox.

" C. Midwinter.

Hospital Board.

Controller J. G. Harvey.

" W. S. Evans.

Ald. F. O. Fowler.

" R. T. Riley.

" W. G. Douglas.

" A. A. McArthur.

" D. McLean.

" J. A. Potter.

Winnipeg Industrial Bureau.

Controller J. G. Latimer.

Ald. F. J. C. Cox.

" T. Wilson.

Winnipeg, Manitoba, February 28th, 1909.

To the Chairman & Committee on Works & Property, City.

Gentlemen:—

I beg to submit herewith my Annual Report for 1908.

Your obedient servant,

H. N. Ruttan, City Engineer.

GENERAL CITY STATISTICS.

Population	118,000
Area of City in Acres	13,990
Rate of Taxation (Mills)	15
Building Permits issued ....1,544 .....Value	\$5,513,700

Street Lighting.

No. of Arc Lamps 2,000 c.p.	675
No. of Incandescent Lamps	85

City Engineer's Office, Winnipeg, Manitoba, Jan. 20th, 1909.

Lieut. Col. H. N. Ruttan, City Engineer, City.

Dear Sir:—

I beg to submit the following as a report of the work done during 1908, in the Public Office.

Total number of permits issued during the year and to whom.

Permit fees, amount collected.

Statement of requests to have work done.

Sewer Connections, statement of permits issued.

Water connections, statement of permits issued.

House numbers and street name plates.

List of pole line permits issued to the Manitoba Gov. Telephones.

List of pole line permits issued to the M. E. & G. L. Co.

List of pole line permits issued to the City Electrician.

List of underground conduit permits issued to the Man. Gov. Tels.

List of gas main permits issued to the M. E. & G. L. Co.

Statement of new water services installed.

Statement of water meters in use December 31st, 1908.

Statement of general statistics, City Water Works Pumping Station.

Statement of leaks repaired in F. S. W. W.

Statement of leaks repaired in domestic water mains.

List of underground conduit permits issued to the Can. Nor. Ry. Co.

List of underground conduit permits issued to the Can. Pac. Ry. Co.

List of underground conduit permits issued to the Grand Trunk Ry. Co.

List of underground conduit permits issued to the City Electrician.

Respectfully submitted,

THOS. H. HOOPER, Chief Clerk.

PERMITS ISSUED IN 1908.

Manitoba Government Telephones.

Pole lines	30
Conduits	37
Excavate to repair conduits	8

City Electrical Department.

Pole lines	17
To construct elec. conduits	2

Contractors.

To use portion of streets for bldg. operations	85
To construct over-head ways	2

General.

Excavating to repair sewer connections	43
To drive over walks	27

Man. Elec. & Gas Light Co.

Gas services to premises	597
Excavate to repair gas services	4
Excavate to lay gas mains	22
Excavate to repair gas mains	61
To put up pole lines	40
To renew gas services	5
To renew gas main	2

Owners.

To move buildings	62
To construct areas	8
Repair area walls	1
Take up section of walk for temporary driveway	12
To put up signs on buildings	6
To construct crossings over boulevards	3
To construct coal chutes	1
G. N. W. Tel. Co. to construct conduits	1
C. P. R. Tel. Co. to construct elec. conduits	1
G. T. Pac. Ry. Co. Tel. to erect poles	1
Can. Nor. Ry. Tel. to construct elec. conduit	1

STATEMENT OF PERMIT FEES COLLECTED DURING YEAR ENDING DECEMBER 31st, 1908.

1908	Sewer Connections	Water Connections	Use of Streets	House Moving	Excavating in Street	General	Erection of Poles	Construction of Areas	Electric Conduits	Signs	Take up Walk	Plumbing	Sale of Blue Prints
January	16.00	9.75	1.00	15.00	3.85	.25	8.00	.. ..	.. ..	.. ..	.. ..	50.00	3.50
February....	15.50	7.75	3.00	65.00	2.45	.. ..	4.00	.. ..	.. ..	2.00	.. ..	46.00	.50
March.....	32.50	14.25	2.00	80.00	5.60	.. ..	.. ..	.. ..	.. ..	.. ..	.50	56.00	.. ..
April	72.00	36.75	8.00	55.00	26.60	.25	4.00	.. ..	.. ..	2.00	1.00	103.00	1.00
May	60.00	32.25	9.00	10.00	39.20	2.25	5.00	15.00	30.00	.. ..	1.50	181.00	1.50
June	114.50	39.50	10.00	10.00	36.75	3.00	4.00	.. ..	45.00	.. ..	2.50	176.00	1.00
July	75.50	42.75	10.00	15.00	24.85	3.25	5.00	.. ..	55.00	.. ..	1.00	182.00	.50
August	63.50	33.25	13.00	20.00	26.25	1.50	3.00	5.00	10.00	1.00	1.00	153.00	.. ..
September ..	55.50	32.00	13.00	10.00	31.15	3.75	8.00	15.00	.. ..	.. ..	2.00	139.00	3.50
October	53.00	29.75	8.00	.. ..	28.70	3.25	2.00	5.00	25.00	1.00	.50	154.00	.. ..
November ..	42.50	22.50	9.00	15.00	19.95	1.50	12.00	.. ..	5.00	.. ..	.. ..	116.00	.. ..
December ..	8.50	10.00	1.00	15.00	2.80	1.75	6.00	5.00	.. ..	.. ..	.. ..	59.00	.. ..
	\$609.00	\$310.50	\$87.00	\$310.00	\$248.15	\$20.75	\$61.00	\$45.00	\$170.00	\$6.00	\$10.00	\$1415.00	\$11.50

Total amount of Cash received\$3,303.90
 Credit by permits issued to Police Department..... 10.35
 Credit by permits issued to City Electrical Department 14.00
 Credit by permits issued to City Fire Department25
 Compulsory and Contract Plumbing and Sewer Connections 33.50
 TOTAL...\$3,362.00

**REQUEST BY OWNERS, TO CITY ENGINEER'S DEPARTMENT, TO
CONSTRUCT CERTAIN WORKS, THE COST TO BE ASSESSED
TO THE PROPERTY BENEFITED AT THE NEXT
ASSESSMENT, FOR YEAR ENDING DEC.**

31st, 1908.

To lower curb for driveway and change walk to suit	24
To construct macadam approach & change walk to suit	14
To lay artificial stone walk across boulevard to curb line	2
To construct asphalt approach	5
To construct cedar block paved approach	2

SEWER CONNECTIONS.

During the year 1908, 1,444 permits were issued to construct sewer connections, this number including 38 compulsory and 29 contract orders.

The compulsory connections are constructed by the City and charged to the property in the case when the owner neglects to have the work done after request by City.

The contract connections are constructed by the City and cost of same charged to property, spread over a term of seven years; this is done at request of owner, who is unable to bear the expense in one payment.

**WORK DONE BY WATER WORKS OPERATING DEPARTMENT
DURING THE YEAR 1908.**

Total number of new services installed	1,225
Total number of old services renewed	73
Total number of old services repaired	238
Total number of leaks found on property and repaired by owners	810
Total number of leaks found on flush tanks and repaired	26
Total number of new services turned on	1,061
Total number of old services turned on	7,101
Total number of old services turned off	4,602
Total number of old services turned off for repairs.....	1,548
Total number of old services turned on on completion of repairs	1,548
Total number of old services turned off for non-payment	1,197
Total number of building services turned off on expiration of time	494
Total number of building services turned on	496
Total number of mains turned off and on for repairs	186
Total number of services inspected for leaks on property	32,616
Total number of fire services inspected 12 times during the year	309
Total number of unmetered services inspected for leaks inside	29,887
Total number of leaks found in houses by inspection	921
Total number of building services inspected during the year ...	496
Total number of notices given to people to cease using lawn ser- vices during hours 9 a.m. to 5 p.m.	167
Total number of covers put on service stop-cock boxes (iron) ..	517
Total number of covers put on service stop-cock boxes (wood) ..	713
Total number of meters installed	970
Total number of meters replaced	599
Total number of meters taken out	802
Total number of meters repaired	2,035
Total number of leaks on mains	122
Total number of new valves installed on old mains	3
Total number of valves repaired	151
Total number of main valves inspected 52 times during the year	1,849
Total number of main valve spindles put on	35
Total number of iron covers put on main valve boxes	138
Total number of wood covers put on main valve boxes	327
Total number of extensions put on main valve boxes	67
Total number of valve plates to indicate location of valves	250
Total length of mains tested	14.25 miles
Total number of test cocks put on	10
Total number of new hydrants installed on old mains	5

WATER WORKS—Continued

Total number of hydrants on old mains where location was changed	4
Total number of hydrants repaired	1,350
Total number of hydrants frozen in post	188
Total number of hydrants frozen in spindle	280
Total number of hydrants repacked	2,710
Total number of hydrant inspections	231,645
Total number of valves on hydrants inspected 12 times during the year	837
Total number of new boulevard services put in	102
Total number of old boulevard services renewed	16
Total number of old boulevard services repaired	17
Total number of new flush tanks connected with water mains ..	26
Total number of granolithic sidewalks repaired over stop-cock boxes	308
Total number of granolithic flags repaired over stop-cock boxes	25
Total number of plank sidewalks repaired over stop-cock boxes	1,115
Total number of times rinks were flooded	269
Total number of feet of main pipe thawed out	70 feet
General inspection for leaks in whole system	3
Main valve boxes thawed out	169
Hydrants cleared of snow	27
Stand-pipes thawed out	6
Drinking fountains thawed out	8
Number of times dead ends on mains were flushed	580

FIRE SERVICE WATER WORKS.

Leaks on mains repaired	38
Main valves repaired	4
Main valve spindles put on	28
Main valve iron covers put on	8
Main valve boxes thawed out	40
Main hydrants operating nuts cleaned	23
Hydrants inspected	14,375
Hydrants repaired	216
Hydrants frozen in spindle	9
Hydrants repacked	53

DOMESTIC.

Inspection and repairs of standpipes	4
Inspection and repairs of slot meters	4
Inspection and repairs of free taps	1
Inspection and repairs of drinking troughs	5
Inspection and repairs of drinking fountains	4

**LEAKS IN FIRE SERVICE WATER WORKS, NEW SYSTEM, FOR
YEAR ENDING DECEMBER 31st, 1908.**

Small sand holes in lead joint	4
Blown joint	5
Broken bolts and flange joints on hydrant branches	18
Split pipe	2
Valve bolts broken at stuffing box	1
Bad joint on sleeve	1
At valve, gland bolts broken	5
At valve, between base and top of valve	1
Defective caulking	4

WATER WORKS OPERATION

REPORT ON NIGHT INSPECTION FOR LEAKS FOR YEAR ENDING DECEMBER 31st, 1908.

Leaks inside of meters	slight	137
Leaks inside of meters	medium	59
Leaks inside of meters	serious	13
TOTAL		209

Leaks between street line and meters	slight	64
Leaks between street line and meters	medium	126
Leaks between street line and meters	serious	31
TOTAL		221

Leaks between street line and mains.	slight	62
Leaks between street line and mains.	medium	141
Leaks between street line and mains.	serious	32
TOTAL		235

TOTAL NUMBER OF LEAKS 665

**LEAKS IN DOMESTIC WATER MAIN FOR THE YEAR ENDING
DECEMBER 31st, 1908.**

Total number of leaks reported & repaired	127
No. of leaks caused by Electrolysis	8
No. of leaks caused by sand holes in lead joints	5
No. of leaks caused by sand holes in pipe	3
No. of leaks caused by broken joints (old bored and turned)	8
No. of leaks at valve at joint between base & top	6
No. of leaks at valve, gland bolts loose	3
No. of leaks at valve, gland bolts broken	10
No. of leaks at valve, at stuffing box	27
No. of leaks from holes in pipe	1
No. of leaks at valve between hydrant & main (gland bolts loose)	2
No. of leaks at valve between hydrant & main (gland bolts broken)	2
No. of leaks from split pipe	26
No. of leaks from bad joints, defective caulking	11
No. of leaks from joints slightly blown	4
No. of leaks from flaw in castings	1
No. of leaks from broken pipes	6
No. of leaks from joints drawn	2
No. of leaks at joint at flush valve	1
No. of leaks from F. S. W. Wks. main resting on pipe	—

**STATEMENT OF TOTAL NUMBER OF WATER METERS IN USE ON
DECEMBER 31st, 1908.**

Style	$\frac{1}{2}$ -in.	$\frac{3}{4}$ -in.	1 in.	$1\frac{1}{2}$ -in.	2 in	$3\frac{1}{2}$ -in.	4 in.	Total
Empire	10,006	997	508	122	71	8	..	11,712
Worthington	93	3	1	..	..	1	..	98
Hersey	34	5	..	..	..	..	..	39
Trident.....	236	..	..	..	..	..	..	236
Crown	2	..	..	..	..	..	..	2
Lambert	52	..	..	..	..	..	..	52
Gem .....	..	..	..	..	..	6	5	11
Thompson	1	..	..	..	..	..	..	1
Buffalo	3	..	..	..	..	..	..	3
	10,427	1005	509	122	71	15	5	12,154

**CITY OF WINNIPEG.
WATER WORKS.**

The water supply system has been extended during the past year by two additional artesian wells, viz.: Nos. 5 & 6.

No. 5 Well is situated on Keewatin Street opposite Selkirk Avenue, and is similar in construction to Wells 3 & 4, though considerably deeper. This well is 102' 6" from power house floor to bottom of well, and is 15' in diameter. The machinery consists of a 300 H.P., vertical, induction motor, with overload capacity of 50%, driving a three stage, 10" Worthington Turbine Pump, with a capacity of 2,500,000 Imp. gallons per 24 hours; the motor being at floor level and the pump at the bottom of the well. This machinery was supplied and erected by the Jno. McDougall Caledonian Iron Works Co. Ltd. of Montreal. A second pump, a duplicate of the first, is now being installed, which will make the pumping capacity of this well 5,000,000 Imp. gallons per 24 hours.

Well No. 6 is situated in Ward 7 (Elmwood) at the corner of Jasper Avenue and Grey Street. This well is 75' deep from floor of pump house, and the machinery is the same as at Well No. 5, having been installed by the same contractors. Pumping was started from this well in November, 1908, and the well has been yielding about 750,000 gallons per 24 hours, since that time. It is hoped to materially increase the capacity of this well by borings into the limestone rock.

WATER WORKS

PUMPING STATISTICS, 1908

1908	Engine 1457	Well No. 2	Well No. 3	Well No. 4	Well No. 5	Total Water Pumped	Total Coal used Lbs.	Quantity Water softened
Jan	72734752	88296773	3148000	18349000	36738300	131506063	1555800	76091556
Feb. ...	90913454	78146249	3909500	11997000	68781000	162834749	1255000	63042950
March .	65583631	77104186	5109000	10191000	72557000	164961186	1264200	74285890
April...	55554314	73923381	577500	2555500	71797500	148964381	801600	68388044
May ...	59437917	81321031	300000	186500	66769500	148422033	792600	75581131
June ...	61910900	77676066	296500	788500	66871000	145632066	814800	76165956
July ...	60370771	74524559	149500	9581500	78525299	162239059	1138200	71147558
Aug. ...	57265115	59663277	140000	10493000	77420500	146525657	1104400	43825909
Sept. ...	56947241	55693071	319000	11926000	73866300	141801051	1138200	Shut Down
Oct. ...	57311094	55197386	74900	8036500	75387000	138283786	1032000	
Nov. ...	47556940	48551484	567000	17718000	68349000	136137484	1338800	
Dec. ...	54050686	68022624	13509000	25131000	49107000	154665626	2012400	
						1781973141	14248000	548508994

NOTE—Engine 1457 pumps into mains from reservoir.

WATER WORKS CONSTRUCTION ACCOUNT.

DEC. 31st, 1908.

DR.

To Balance brought forward Dec. 31st, '07, as per	
Annual Report of 1907	\$500,594.84

To Expenditure, Dec. 31st, 1907, to Dec. 31st, 1908.

Mains, labor & material	\$116,937.91	
Land Account	33.37	
Wells 3, 4, 5, 6, 7 & test wells	10,041.66	
New pumps	9,747.57	
Boiler House No. 2 & Boiler Plant	11,268.36	
Power House 3, 4, 5 & 6	1,961.32	
Electric generators & power lines	11,105.59	
Tools & plant	120.31	
No. 2 Power Station	19,515.09	
Sale of bonds, advertising etc.	106.49	
Steam main extension	2,502.71	
Softening plant	644.85	
Interest Account	10,866.58	
Meters and Installing do.	17,601.20	212,453.01
		<hr/>
		\$713,047.85

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By proceeds sale of bonds	454,580.80
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	\$258,467.05

STREET NUMBERS & NAME PLATES.

During the year, 916 houses were numbered in the south end of the city and 995 in the north end, 61 changes were made in the south end and 38 in the north end.

267 street name plates were put up and 82 signs, against spitting on walks.

**PERMITS ISSUED TO THE MANITOBA GOVERNMENT
TELEPHONES DURING THE YEAR ENDING
DECEMBER 31st, 1908, FOR THE
ERECTION OF POLES.**

Side	In	From	To	Poles
W. ..	Arlington to continue	lead S.....		10
W. ..	Aikins	N. of Anderson ..		2
N.	Burrows	Extend lead.....	McGregor	8
W. ..	Charlotte	Notre Dame	McDermot.....	2
N.	Gertrude	E. of Aynsley.....		2
E.	Isabel	Logan.....	Henry	
W. ..	Lane W. of Smith ...	North	Ellice	3
S.	Lane bet. McDermot and Winnipeg.....	Olivia	McPhillips	
S.	Lane S. of Rathgar..	W. from Pembina ..		
N.	Lane bet. Academy	Road and Crescent	Rd. E. of Harrow ..	
N.	Lane bet. Bannatyne and William.....	Emily	McPhillips	
S.	Lane S. of Corydon ..	E. of Nassau.....	Pembina Road.....	4
.....	Lane bet. Harvard and Ethel.....	W. of Harrow to	Continue Lead	
E.	Montcalm	Nairn Avenue.....	Ry. track	
E.	Meade.....	N. of Higgins. ..		2
S.	Magnus	W. of Salter	Powers	
W. ..	Ruby.....	Portage Avenue..	South	2
E.	Strathcona.....	Portage Avenue N	a point opp. 586.....	3
N.	Weatherdon	W. of Pembina end of present lead.....	Can. Nor. Ry. tracks	8

**PERMITS ISSUED TO THE MANITOBA ELECTRIC AND GAS LIGHT
COMPANY, DURING YEAR ENDING DECEMBER 31st, 1908, FOR
ERECTION OF POLES.**

Side	In	From	To
W. ..	Annabel	Higgins	River
W. ..	Aubrey	Portage	S. to end of street
E.	Aikins	Mountain	Polson
E.	Cochrane	Machray	Church
W. ..	Central	Armstrong's Point	Blanchard & Cornish
S.	Chambers	Bird's Hill Road	Roch
N.	Cathedral	Salter	McKenzie
S.	Church	Main	Cochrane
W. ..	Downing	Notre Dame	Yarwood
W. ..	Disraeli	Euclid	Rover
E.	Emslie	Cathedral	Machray
E.	East	Logan	1 Blk. S. of William
N.	Fleet	Pembina Road	Aynsley
E.	Gertie	Notre Dame	William
S.	Henry	Chambers	Brant
	Hespeler	Bird's Hill Road	Red River
N.	Inkster	To fill in between two end of pole line near Mac Street	
S.	Kylemore	Pembina	Nassau
E.	Lane E. of Main	Church	Machray
N.	Manitoba	Main	River
S.	McDermot	Monkman	McPhillips
N.	McArthur	Scotia	Mac
S.	Matheson	Main	Scotia
N.	Mulvey	John	Helen
W. ..	Mac	Polson	McArthur
N.	Redwood	McGregor	McKenzie
W. ..	Rodent	Dearborn	Chambers
S.	Stella	Main	King
W. ..	Spence	Broadway	S. to intersection of Balmoral Place
W. ..	Wall	End of present line near Portage	Notre Dame, South to

**STATEMENT OF PERMITS ISSUED TO THE MANITOBA
GOVERNMENT TELEPHONES, DURING THE YEAR
ENDING DECEMBER 31st, 1908, FOR LAYING
CONDUITS.**

- Austin Street S.E. corner Higgins Avenue 100' long 2 duct.
- Broadway, from end of present conduit just W. of Maryland to 1st pole in lane South of Broadway & West of Maryland. 2 duct 124'.
- Corner Graham & Hargrave bet Bell Tel. M.H. & Govt. Tel. M.H.
- Colony Street at intersection of Portage, bet. Govt. Tel. M.H. & Bell Tel. M.H.
- Colleen Street from M. H. Qu'Appelle Northerly 50' 2 duct.
- Hargrave, extend Conduit on W. side to old Bell Tel. M.H. on Portage.
- Higgins Avenue, just East of Maple, 200' long 2 duct.
- Logan & Ellen, intersection, bet. Bell Tel. M.H. & Govt. Tel. M.H.
- Lane south of Broadway on Smith between Bell Tel. M.H. and Govt. Tel. M.H.
- Lombard at Rorie, 4 and 6 duct branch.
- Lane South of Broadway from M.H. Edmonton to a point 72' Easterly. 2 duct.
- Lane North of Elgin from Princess Street W. to Ry. Spur track.
- Lane West of Nassau & North & South of Corydon Avenue.
- Lane bet. Edmonton & Kennedy, from a point 50' South of Qu'Appelle to a point 50' North of Qu'Appelle. 2 duct.
- Lane bet. Carlton & Edmonton from Telephone M.H. Qu'Appelle to a point 50' South 2 duct.
- Lane between Hargrave & Carlton from 50' North to a point 50' South of Qu'Appelle 2 duct.
- McMillan Avenue (2 duct) Pembina East to 1st lane, 26' from the North line thence N. to 1st pole. In Pembina from McMillan to Corydon, 16' from the East line.
- Maple Street, N.E. corner Higgins & Maple. 25' long. 2 duct.
- Ogilvie's Mill (2 duct) 20' long.
- Princess, intersection of Logan, between Govt. Tel. M.H. & Bell Tel. M.H.
- Sherbrooke (2 duct) Broadway to Preston, 14' from the West line, West in Preston to 1st lane 17' from the South line, South in 1st lane 30' to 1st pole. Also branches to run East and West of Sherbrooke in 1st lane South of Broadway 154' W. and 197' E. to poles, to run parallel to property line.
- Sherbrooke from a point 50' North of Tel. M.H. just South of Notre Dame Avenue to a point 78' S. & from M. H. Easterly across Sherbrooke Street to a point 249' East in 1st lane South of Notre Dame Avenue to connect pole line.

**LIST OF PERMITS ISSUED TO THE MANITOBA GOVERNMENT
TELEPHONES DURING THE YEAR ENDING DECEMBER 31st,
1908, FOR CONDUITS.**

In	From	To	Remarks
Adelaide	M.H. Notre Dame	100' North	33' from E. line.
Charlotte	M.H. Notre Dame	100' North	17' from W. line
Corydon	Tel. M.H.	70' West	
Dagmar	M.H. Notre Dame	111' North	30' from E. line.
Ellen	Notre Dame	75' North	16' from W. line.
Lombard	Rorie	174' East	13' from N. line.
Lane West of King	ing extending just	N. & S. of Bann	atyne.
Lane East of Nassau	sau from a point	200' N. to a point	200' S. of Cory-
don.			
Main & William			
(Cor.)	Government Tel	ephone M.H. to	E. curb line.
Main & Market .	Bell Telephone	M.H. to Govt. Tel	. M.H.
Main & McDer-			
mot	Bell Tel. M.H. t	o Govt. Tel. M.H.	
Main & Portage .	Bell Telephone	M.H. to Govt. Tel	. M.H.
Main & Graham	Bell Tel. M.H. t	o Govt. Tel. M.H.	
Main & Higgins	Bell Tel. M.H. t	o Govt. Tel. M.H.	
River Avenue ..	Tel. M.H. S.W. co	r. Nassau & Rive	r West to East
	line of Nassau	& S. 50' S. of S.	line River Ave.

CONDUITS.**Can. Nor. Ry. Co.**

From Government Telephone Man-hole at the N.E. corner Main & Portage, to premises at N.W. corner Main & Portage.

Can. Pac. Ry. Co. Telegraph.

From C. P. Ry. Tel. Man-hole at the N.W. corner of Main & Higgins, to Provincial Govt. Telephone Man-hole. 34' 6".

Grand Trunk Pac. Ry. Co.

In lane extending West from Fort Street at a point in rear of Hudson's Bay Stores, to the lane in the rear of Broadway Court.

**STATEMENT OF PERMIT ISSUED TO THE CITY ELECTRICAL
DEPARTMENT, FOR YEAR ENDING DECEMBER 31st, 1908,
FOR THE LAYING OF CONDUITS.**

Side	Street	From	To	Remarks
E. ...	Main	Water	Graham	31 ft. 6 in. from E. line
S.	Rupert	Main	Louise	

**STATEMENT OF PERMITS ISSUED TO THE CITY ELECTRICAL
DEPARTMENT, DURING YEAR ENDING DECEMBER 31st,
1909, FOR THE ERECTION OF POLES.**

Side	Street	From	To	No. of Poles
E. ...	Brown	Pritchard	Burrows	35
W. ..	Lorenzo and Lane	Barker	Grove	
E. ...	Main	Higgins	Assiniboine River (Lamp Poles)	
S.	Nairn	Old C.P.R. Main line	C. P. R. Molson Branch	
S.	Portage	Main	Vaughan	3
W. ..	Parr	Selkirk	Burrows	
W. ..	Rachael	Rover	Sutherland	
S.	St. Mary's	Garry	Smith	
S.	Tweed	Montcalm	E. C.P.R. Track	
S.	Wolever	Pine	Ashburn	

**PERMITS ISSUED TO THE MANITOBA ELECTRIC & GAS LIGHT
COMPANY DURING YEAR ENDING DECEMBER 31st, 1908,
FOR LAYING OF GAS MAINS.**

In	From	To	Remarks
Alloway ...	Maryland	West End of St.	14' from N. line.
Buell	Maryland	Wood	14' from N. line.
Blanchard ..	Central	W. to Assiniboine	14' from N. line.
Burrows ...	Aikins	Powers	45' from S. line.
Central ...	Blanchard	Cornish	20' from E. line.
Corydon ...	Pembina	Stafford	14' from N. line.
Home	Portage	Buell	14' from W. line.
Harriett ..	McDermot	Bannatyne	14' from W. line.
Harvard ..	Harrow	Guelph	14' from N. line.
Higgins ...	Argyle	McFarlane	17' from N. line.
Lendrum ..	Broadway Place	N. s. Portage Avenue .	
Llewellyn .	Roslyn Rd.	S. 100'	14' from W. line.
McGee	Portage	Livinia	12' from W. side.
Portage ...	Sherbrooke	Home	20' from N. line.
Redwood ..	Main	W. to Sinclair	18' from N. line.
Sargent ...	Simcoe	Arlington	14' from N. line.
Simcoe	Portage	Ellice	13' from W. line.
Selkirk ...	McGregor	McKenzie	10' from S. line.
Selkirk ...	Austin	E. to end of Street ...	14' from N. line.
Victoria ...	Lombard	Notre Dame	17' from W. line.

CITY BRIDGES.

WORK REQUIRED TO BE DONE IN 1909.

Overhead Bridge, Salter Street.

Replanking.

New supports for sidewalks.

Maryland Street Bridge.

Sidewalk and railing W. side of bridge.

Two coats of painting.

Osborne Street Bridge.

Raise bents in South approach to grade.

Main Street Bridge.

Two coats of painting.

Louise Bridge.

Two coats of painting.

Fixing of endlifts.

New flooring.

St. John's Avenue Bridge.

New floor.

Omand's Creek Bridge, Portage Avenue

New superstructure and one pier.

Note:—These repairs and renewals in addition to ordinary maintenance, such as plank repairs etc.

**STATEMENT OF WORK DONE ON BRIDGES DURING THE YEAR
ENDING DECEMBER 31st, 1908.**

Louise Bridge.

West approach was widened and shortened.

St. John's Avenue Bridge.

The supports were overhauled and strengthened.

Colony Creek Drain Bridge (Empress & Sargent)

New bridge built. (By day labor).

Colony Creek Drain Bridge. (Saskatchewan Avenue).

New bridge built, old torn down.

Omand Creek Bridge. (Portage Avenue).

Bridge temporarily strengthened by 5 framed bents.

Bridge on Panet & Nairn. (Elmwood).

16' pile bridge was built in conjunction with the rural Municipality of Springfield.

Redwood Avenue Bridge.

The substructure was completed and superstructure received and erected. The flooring was laid and the bridge opened for traffic.

This bridge consists of 1 draw span 254.5 feet end to end of lifts. On the Redwood end of draw span, one fixed span (150') and on the Elmwood end, 2 spans (95.5' and 150') and one timber approach (16'). In all 650 feet of steel bridge.

The foundations consist of concrete piers resting on tamarac piles (below low water mark) carried to bed rock. Where these piles are exposed to river water, they are heavily and substantially protected with rip-rap.

The clear width of roadway is 26', and the flooring, consisting of 6" thick reinforced concrete with paving of creosoted wood blocks, is laid with double line of street car tracks. There is one sidewalk 6' wide on each side of the bridge. The liveload carrying capacity of the structure is 3,800 lbs. per running foot, and the superstructure is exceptionally rigid, all joints being riveted.

The endlift and swinging machinery will all be electrically worked from the cabin in centre of swing span and by one man.

The bridge can be opened in 1½ minutes.

Winnipeg, Manitoba, February 22nd, 1909.

H. N. Ruttan, City Engineer.

Dear Sir:—

I beg to submit the following as a report of the work done during 1908, in the Draughting Department.

50 sewer plans covering $7\frac{1}{2}$ miles.

72 water main plans covering $13\frac{1}{2}$ miles.

59 pavement plans covering over $10\frac{1}{2}$ miles.

45 plumbing plans.

135 miscellaneous plans.

List of Plans in Addition to the Above.

Pump house for quarantine hospital.

Steel nosing for Redwood Avenue Bridge.

High pressure pump for testing hydrants.

Plan for underground lavatory.

Lethal chamber for City Pound.

Additions and alterations to new police station.

Well No. 5, shewing 1 pump complete

Plan of letter blocks for street names.

Plan of air receiver for well.

Boiler, 150 lbs. pressure.

Plan for additional pump, Well No. 5.

Plan for box girder for Osborne Street Bridge.

Plan of stand pipe for sprinkler carts.

Plan of street railway bonding of different cities.

Plan of complete set of sewer castings.

Plan of Webb Lamps in use.

Bridge across creek at Empress and Alberta.

Well No. 6, shewing 1 pump complete.

Plan shewing transmission wire to Well No. 6.

Complete set of Decarie Incinerator Plant (8).

Plan for proposed bridge across Assiniboine River, at River Ave.

Plan for iron stairway for generator house.

Plans for lavatory for generator house.

Plans of softening plant used in other cities.
 New maps shewing pavements and sidewalks.
 Plan of water works, for installing coal conveyor.
 Location plans for 6 subways.
 Plan of shed for pipe prover at City Yards.
 Vault for Waterworks.
 Plan for revised plumbing for market buildings.
 Map shewing all house numbers.
 Plan for folding polling stands.
 Plan of proposed sewer ventilator.
 Tracing of wall map for house numbers.
 Compiling a list of the exact length of water main in City's streets.
 Record plan of Louise Bridge.
 Record plan of Maryland Bridge.
 Record plan of Main Bridge.
 Complete plan of Well No. 5.
 Plan of Well No. 1.
 Plans required for H. P. F. S. W. Wks. investigation.
 General arrangement of F. S. W. W.
 Assembly drawing of gas engine F. S. W. W.
 Plan of gallery for F. S. W. W.
 Plans of proposed vault fittings.
 Total number of plans made during the year amounted to nearly 600.
 All records brought up to date.
 All wall maps brought up to date.

During the year over 3,000 blue prints were made. I may say that since the Department has been here (223 James St.) we have had better opportunity to cover the work more quickly and satisfactorily, regarding the blue printing.

Your obedient servant,

ALAN H. COTMAN.

ASPHALT PAVEMENTS CONSTRUCTED DURING 1908.

Street	From	To	Length Feet	Sq. Yds.	Co ncrete Cur b and G utter
Arlington	Portage	Southward ..	986.9	2,734.7	
Austin	at Higgins ..			78.7	
Aberdeen .	Widening on Main Street .		43.8	157.5	
Chestnut .	Broadway ...	Ida	1,544.0	4,927.0	3,910.5
Flora & M	ain intersection		18.0	108.1	
Garry	Portage	Notre Dame	382.0	2,208.2	768.8
Higgins ...	Main	Louise Br. .	4,733.3	25,870.4	8,664.2
Kingsway	Well. Cres. ..	Stafford ...	1,175.8	3,045.5	2,388.7
King	Market	James	225.3	1,055.3	
Knox	Logan	Alexander .	346.3	841.9	667.3
Logan	Intersection	Lizzie St.	53.7	79.4	
Logan	Intersection	King Street ..	40.2	63.1	
Logan	Cor. of Nena		206.0	584.5	
Logan	at Main		100.0	299.7	
1st lane N. Bannatyne	Nena	Margaretta .	267.0	357.0	535.6
Main	Graham	Higgins	4,494.1	47,597.2	176.0
Main	Intersection	of Selkirk ...		489.3	
Nena	Intersection	of Logan		109.0	
Nena	near N Dame		76.1	360.2	238.0
Notre Dame	at Nena		174.2	915.7	
Notre Dame	Portage	Charlotte ...	1,551.0	6,260.7	
Nena	Intersection	of Alexander .	193.0	488.8	156.9
Preston ...	Walnut	Home	1,006	3,165.1	1,976.9
Proud	Approach of.	Spence	24.8	81.0	69.7
Portage ...	Main	Victoria ...	725.0	3,575.2	1,149.9
Pembina ..	at Corydon .		113.7	224.6	
Rorie	Market	Spur 'Track .		773.2	281.0
Rachael ...	Subway		83.7	297.6	
Subway ...	Main St. (Oak Header	111.7)	137.0	810.6	
Sherbrooke.	Lane approach		17.7	26.2	43.3
Selkirk	Andrews	Sinclair	3,302.8	10,984.0	
Sherbrooke	for W.E.S.R.		155.7	350.1	
Sutherland	Gladstone ...	Euclid	989.4	4,668.7	1,689.9
Selkirk ...	at Main		79.0	144.7	
Salter	Stella	Overhead Br	783.9	2,836.8	1,731.3
Sargent ...	Arlington ...	Maryland ...	1,291.0	9,459.9	3,849.9

ASPHALT PAVEMENTS—Continued

Street	From	To	Length Feet	Sq. Yds.	Concrete Curb and Gutter
Victor	Portage	Livinia	926.0		1,947.1
Wardlaw ..	Well. Cres. ..	Stafford	1,697.0	6,088.5	3,346.0
Corydon ...	Pembina	Lilac	3,945.9	16,318.9	7,826.6
Emily	William	Bannatyne ..	306.7	749.7	611.4
			34,355.1	159,187.0	42,033.0

Length in feet	34,355.1
Sq. yards	159,187.0
Lin. ft. curb	42,033.0
Laid in 1908	6.506 miles
Laid previously	43.389 miles
Total	49.895 miles
Private work	sq. yds. 1,016.71
Asphalt repairs	sq. yds. 23,335.6

MACADAM PAVEMENTS CONSTRUCTED DURING 1908.

Street	From	To	Length Ft.	Sq. Yds.	Curb Ft.
Lane bet Bal- moral & Spence	Sargent	Ellice	1,253.2	1,952.4	1,233.0
Cornish	Langside	245' East	245.0	730.5	547.0
Euclid	Main	Sutherland	1,979.9	9,121.2	
Lane bet, Fur- by & Sher- brooke	Sargent	Ellice	1,253.8	1,997.2	2,507.6
Lane bet Gert- rude & Wardlaw ...	Nassau	Pembina ..	1,127.0	2,254.0	2,218.0
Lane bet Ken- nedy & Vaughan ...	St. Marys ...	South End.	402.5	805.0	805.0
Lane W. Os- borne	Stradbrook Pl	River Ave..	562.4	641.0	1,094.2
Lane bet. Por- tage & El- lice	Sherbrooke ..	Maryland .	266.0	449.2	472.0
Preston	Arlington ...	Wood	172.0	458.6	344.0
Lane between Stradbrooke & Wardlaw	Pembina	Nassau ...	1,032.2	1,430.8	2,046.2
Lane between Stradbrooke & Maryland	Sargent	Ellice	1,241.0	1,698.2	2,084.0
Lane between Wardlaw & Stradbrooke Pl.	Nassau	Well. Cres..	758.7	1,065.7	1,499.4
			10,293.7	12,603.8	14,850.4

Lin. feet	10,293.7
Miles	1.953
Sq. yds.	11,873.3
	Miles
Macadam laid to 1907	38.037
Deduct macadam removed 1907-08	2.150
	35.887
Macadam laid 1908	1.953
Total macadam Dec. 31st, 1908	37.840

BLOCK PAVEMENTS CONSTRUCTED DURING 1908.

Street	From	To	Length	Square Yds.	Curb
Lane between Bannatyne & McDermot	Nena ...	Margaretta ...	266.0	532.0	532.0
Lane North of Broadway ..	Garry	Smith	260.6	521.2	521.2
Lane between Broadway & St. James Pl.	Shore	Broadway Pl. .	422.3	708.2	910.6
College	Salter	Andrews	1,323.0	3,911.9	2,730.2
Lane between Donald & Smith	Graham ..	St. Mary's ...	503.0	1,005.0	1,044.0
Logan	McPhillips	Blake	4,595.7	20,475.0	8,997.9
Lane between Main & Albert	Portage, ↑	Dame, McDermot	176.5	365.4	174.4
Lane between Main & King	James	Rupert	218.0	387.5	436.0
Lane between Pine & Spruce	N. Dame .	S. line Lot 8, Block 5	875.6	1,308.4	1,751.2
Redwood	Main	Redwood Br. .	482.0	2,105.8	1,010.0
Stadacona ...	Nairn	Jasper	813.3	2,380.2	1,692.7
Vincent	Logan	Gallagher	219.0	649.5	473.2
Vincent	Gallagher	Whyte	170.4	598.1	350.8
Whyte	Vincent ..	Quelch	635.7	1,695.2	1,213.1
Lane between York & St. Marys	Hargrave	Carlton	650.0	1,285.8	1,272.0
			11,671.1	37,929.2	23,109.3

Length in feet11,671.1

Length in miles 2.21

Sq. yds.37,929.2

Lin. ft. of curb	23,109.3
Previous miles (1907)	24.06 miles
Removed (1907 and 1908)	1.21 miles
	<hr/>
	22.85 miles
Laid in 1908	2.21 miles
	<hr/>
Total to Dec. 31st, 1908	25.06 miles

ARTIFICIAL STONE WALKS CONSTRUCTED DURING 1908

Street	Side	Wth.	From	To	Length Ft.	Area Sq. Yds.
Albert	W	11.2	Notre Dame	McDermot	519.0	638.0
Alexander	S	9.5	Princess	King	264.2	146.3
Alexander ..	N	9.5	Princess	100' East	100.0	104.5
Argyle	W	9.5	Henry	Higgins	466.7	793.2
Adelaide ..	W	6'	Notre Dame ..	William	885.6	590.4
Burrows ..	S	6'	Charles	164.5 West	185.0	142.5
Bannerman	N	6'	Main	Scotia	2,288.0	1,523.9
Bannatyne ..	N	9.5	Rorie	Transfer Track.	592.4	618.0
Charles	W	6'	Burrows	81.3 South	97.0	70.0
Carlton	W	6'	1st Lane S.			
			Portage	St. Mary's	969.5	646.3
Cauchon ..	W	6'	River Ave ...	End	409.5	272.6
Charlotte ..	E	6'	William	Notre Dame ...	1,122.9	748.1
Carlton	W	6'	St. Mary's ...	York	530.5	352.4
Colony	W	6'	Broadway ...	Osborne Pl. ...	700.5	466.9
Carlton ...	W	5'	Portage	Qu'Appelle	805.0	447.2
Dundurn Pl.	B	6'	End of pres			
			Walk	Walnut	201.4	134.3
Donald	W	2.3	Portage	Notre Dame ..	761.4	200.0
Elgin	N	6'	Ellen	Isabel	942.5	628.3
Furby	E	6'	Portage	95.5 S. Portage .	95.5	65.7
Florence ..	N	6'	Hay	350' West	350.0	233.3
Florence ..	S	6'	Hay	349' West	349.0	232.6
Furby	W	6'	Ida	Cornish	419.8	279.8
Good	W	5'	Portage	Broadway	1,746.0	960.9
Gertrude ..	S	6'	Well. Cres ..	245' West	245.0	164.2
Higgins ...			In front of W	aterous Engine		
			Works		17.1	15.2
Higgins ...	E	8'	End of Old ..	Eastward	1,575.6	891.2
Higgins ...	E	8'	Fonseca	Meade	113.0	115.0
Isabel	W	2.5	Bannatyne ..	Notre Dame ...	747.5	200.5
Isabel	E	2.5	McDermot ..	Bannatyne	255.0	71.0
Jarvis	N	6'	Hallett	Maple	76.7	153.4
King	W	11.5	McDermot ..	132' South	132.0	168.6
Lewis	W	5'	Pembina	1st Lane S.	409.5	227.4
Lisgar	S	6'	Austin	Beaconsfield ...	485.3	323.2
Logan	N	9.5	Nora	Trinity	1,326.4	1,396.8
Logan	N	9.5	Rietta	Nora	230.0	242.2
Langside ..	E	6'	Preston	W. line lot 86 ..	217.0	144.6

ARTIFICIAL STONE WALKS—Continued

Street	Size	Wth.	From	To	Length Ft.	Area Sq. Yds.
Logan	N	9.5	King	Isabel	1,996.1	2,071.7
Maplewood	S	6'	Hay	Casey	500.0	333.3
Monkman .	W	6'	William	Notre Dame ...	741.1	496.7
McDermot .	W	6'	Monkman ...	Brant	730.4	486.9
McDermot	S	11.5	Albert	Arthur	149.0	203.0
Main	W	17'	Rupert	Logan	636.1	1,199.8
Main	W	12.9	Higgins	Join Walk in Subway	53.6	74.3
Main	W	1.8	In front of N	o 806 Main Street	24.1	4.8
Oakwood ..	W	6'	Casey	Fisher	474.6	316.4
Osborne ...	E	6'	River Ave ..	Osborne B'dge .	695.2	463.5
Olivia	E	6'	Bannatyne ..	1st Lane S	134.2	89.4
Princess ..	W	13.4	Alexander	Henry	746.5	1,027.6
Princess ...	W		In front of F	airchild's B'd'ng.	132.5	70.3
Portage ...	N.E	6'	Carlton		44.5	31.4
Portage ...	S	6'	in front of F	armer's Block ..	89.7	59.8
Scotia	E	6'	Old City Limits	New City Limits	1,476.7	984.4
Sargent ...	S	6'	Maryland to	1st Lane N. Young	912.5	604.4
Sutherland	N	9.5	Euclid	Gladstone	828.9	860.5
Vaughan ..	W	6'	Portage	Ellice	716.7	477.8
					31,713.9	24,265.3

Length lin. ft. 31,713.9
 Sq. yds. 24,265.3
 Length miles 6.006
 Laid 1908 6.006 miles
 Previously laid 67.871 miles

Total 73.877 miles

PLANK WALKS CONSTRUCTED DURING 1908.

Side	Width	Street	From	To	Length New
S	4-8	Atlantic	Powers	Parr	2,644.0
E	4-8	Aikins	Pritchard ..	Magnus	593.0
S	4-8	Burrows	Battery	McPhillips	1,776.0
E	4-8	Brazier	McIntosh ..	Poplar	290.0
W	4-8	Brazier	Poplar	Johnson	248.0
W	5-4	Birdshill Rd ...	Hart	Noble (54' N of)	390.0
N	4-8	Buell	Arlington ..	Walnut	1,325.0
S	4-8	Buell	Maryland ...	Walnut	632.0
W	4-8	Centre	Portage	Kellar	565.0
W	4-8	Curtis	Higgins	W. Line Lot 4 ...	232.0
N	5-1	Carter	Kent	E. Line Lot 257 ..	1,634.0
S	4-8	Dudley	John	250' West	296.0
N	4-8	Elgin	East	Langford	575.0
N	5-4	Fleet	John	Pembina H'way ..	324.0
N	4-8	Hespler	Birdshill Rd	Centre	1,259.0
S	4-8	Harbison	Birdshill Rd	Watt	3,080.0
S	5-4	Hetherington ..	Pembina	Pt. 400' W.	400.0
S	5-4	Hetherington ..	400' W. Pem- bina	400' W. Nassau..	975.0
W	4-8	Home	Preston	Buell	806.0
W	4-8	Home	Preston	Pt. 197' North ...	197.0
E	4-8	Helen	McMillan	Well. Cres	205.0
S	4-8	Hespler	Birdshill Rd	Counter	1,258.0
S	4-8	Jessie	Aynsley	Lilac	567.0
N	5-4	Jessie	Hugo	Helen	502.0
E	5-4	Langford	William	Pacific	822.0
E	4-8	Lipton	Yarwood	Notre Dame	1,056.0
E	4-8	Langside	Preston	Pt. 132' North ...	132.0
B	5-4	Lipton	Portage	Buell	1,034.0
S	5-4	Mortimer Pl. ..	Machray	East Line of St. Cross St.	603.0
E	4-8	McPhillips	Selkirk	Burrows	1,208.0
E	4-8	McGregor	Bannerman ..	Atlantic	301.0
W	4-8	McMillan	Helen	Pt. 100' East	100.0
W	4-8	McGregor	St. Johns	Mountain	332.0
S	4-8	McMillan	Pembina	210' East	210.0
S	4-8	Manitoba	Shaughnessy	Stonewall Br. C. P. R.	1,112.0

PLANK WALKS—Continued

Side Width	Street	From	To	Length New
N 4-8	Mountain	Garlies	Brown	280.0
N 5-4	Nairn	Montcalm ...	Eaton	1,472.0
W 4-8	Nassau	Beresford ...	Rosedale	336.0
E 5-4	Newman	Portage	394' South	395.0
W 4-8	Nassau	Morley	Weatherdon	1,048.0
W 5-4	O'Meara	Church	Pt. 200' North ...	265.0
W 5-4	Parr	Dufferin	Jarvis	372.0
W 5-4	Parr	Flora	Pritchard	587.0
W 4-8	Quelch	Alexander ..	S. Line Roy	
S 4-8	Roy	Quelch	Langford	476.0
W 4-8	Richmond	Portage	Kellar	575.0
S 5-4	Rathgar	Pembina	226' West	226.0
E 5-4	St. Cross St. ...	S. Line Mort- imer Place ..	33' N. of S. Line Machray	432.0
E 5-4	Stadacona	Tweed	N. Line D.G.S. 51 St. John	828.0
E 4-8	St. James	Portage	Kellar	617.0
E 4-8	Stafford	Yale	Wardlaw	295.0
N 4-8	Selkirk	Battery	McPhillips	1,430.0
E 4-8	Shaughnessy ...	Selkirk	Manitoba	525.0
N 5-4	Winnipeg Ave..	McPhillips ..	Pt. 160' West	160.0
W 4-8	Watt	Martin	Chalmers	500.0
				38,392.0

Length in Feet 38,392.0

1908 Length in Mile 7.271

Previously laid, miles 299.347

Total miles 306.618

PIPE SEWERS CONSTRUCTED DURING 1908.

Street	From	To	Size	Length Ft.	1 S.C.	2 S.C.	Single	C.B.	F.T.	L.H.
Arlington	Yarwood	Notre Dame	12"	649.0	.		1	4	1	
Brant	Alexander	Logan	12"	342.0				2	1	
Buell	Sherbrooke	Maryland	12"	294.0				2	1	
Buell	Walnut	Maryland	12"	659.0		1	1	2	1	
Banning	Einarson	Lamp Hole	12"	322.0			1	2		
Banning	N. Line Lot 13	Livinia Ave.	12"	666.0			1	2		1
Boyd	Andrews	McGregor	15"	328.0			1	4	1	
Buell	Furby	Sherbrooke	12"	280.0				2	1	
Charles	Manitoba Ave	Alfred	12"	762.0				6	1	
Carlow Ave	Nassau	333.7 West	15"	333.7			1	2		
Carruthers	Main	McGregor	18"	1,493.9						
			15"	1,486.8						
			12"	452.6	5	4	4	22	1	
Church	Main	O'Meara	12"	300.0	1			2		
Derby	198' S of Jarvis	Sutherland	12"	125.0					1	
Dundurn Place	Walnut	F.T.	12"	143.6			1		1	
Euclid Avenue	Main	Austin	12"	370.0				2	1	
Fleet	John	Pembina Highway	12"	212.0	1			2		
Gunnell	Henry	Higgins	12"	216.5	1	1		2		
Gertrude	Aynsley	Lilac	12"	524.0			1	4	1	
Higgins	Meade	130' East	12"	129.0				1	1	
Higgins	Point Douglas	Louise Bridge	12"	500.5	1					
Higgins	Park	Gunnell	12"	620.3			1	2	1	

PIPE SEWERS CONSTRUCTED DURING 1908—Continued

Street	From	To	Size	Length Feet	1 S.C.	2 S.C.	Single	C.B.	F.T.	L.H.
Jasper	Montcalm	Roland	12"	913.5			2	4	1	
Montcalm	Jasper	Thames	18"	572.0	2			4		
Montcalm	Jasper	End of St.	18"	337.0	1			2		
			15"	635.0	2			4		
Montcalm	Jasper	End of St.	12"	705.8	1	1	1	4	1	
Manitoba	Battery	Sinclair	15"	660.5	1		1	4		
			12"	618.2			1	4	1	
Mordaunt	Crossing	Higgins Ave.	12"	67.0						
May	M.H.	N. line Higgins	12"	30.0						
Main	Higgins	Northward	12"	292.0						
			15"	38.6	1	2				
Mortimer Pl.	St. Cross	Machray	12"	543.0				2	1	
May	Higgins	Macdonald	12"	334.0				2		
Maryland & Sher- brooke	Sargent	Ellice	9"	165.0				1		
McAdam	Mac	1st lane W.	18"	434.0	1			2		
McArthur	Crossing	Higgins	12"	67.0						
McGregor	Jarvis	1st lane N.	12"	183.0				2	1	
McMillan	Hugo	L.H. 182' W.	15"	182.0					1	
McMillan	182' W.M.H. Hugo ...	Helen	15"	284.0	1	1	1	2		

PIPE SEWERS CONSTRUCTED DURING 1908—Continued

Street	From	To	Size	Length Feet	1 S.C.	2 S.C.	Single	C.B.	F.T.	L.H.
Nairu	Stadacona	Roland	12"	1,284.5						
			15"	655.5						
			18"	416.0	1	3	5	11	1	
Nassau	Morley	Arnold	12"	241.0						
O'Meara	Church	L.H.	12"	232.0				2	1	
Point Douglas	Crossing	Higgins	12"	90.0				2		1
Pine	Notre Dame	L.H.	15"	495.0		1	2	4		
Pacific	East	Keewatin	18"	649.0			2	4		
			15"	642.8			1	2		
			12"	645.8			1	2	1	
Rosedale	Helen	John	15"	544.3			2	2		
			12"	546.3			1	2	1	
			15"	317.3						
Rathgar	626' W. Pembina	Nassau	12"	810.0			1	4	1	1
Reaewood	Main	Bridge	12"	742.0				6	3	
Salter	Redwood	Burrows	12"							
St. Cross	M. H.	Mortimer Pl.	12"	89.0	1					
Sargent	Simcoe	Home	12"	232.5				2	1	
Sherbrooke & Furby	Sargent	Ellice	9"	161.0				1		
Stadacona	Newton	Nairn	18"	182.0	1			2		
Stadacona	Jasper	Northend	15"	713.0	2			4		
			12"	413.0				2	1	

PIPE SEWERS CONSTRUCTED DURING 1908—Continued

Street	From	To	Size	Length Feet	1 S.C.	2 S.C.	Single	C.B.	F.T.	L.H.
Talbot	Stadacona	Montcalm	18"	543.3		1	2	2		
			15"	547.5			1	2		
			12"	538.7			1	2	1	
Talbot	Montcalm	Roland	15"	835.0	1	1	2	4		
Wardlaw and Strad- brooke Pl.	Pembina	Nassau	9"	161.0				1		
				30,462.0	15	25	40	162	27	6

Length in feet30,462

Length in miles 5.769

Summary-on next page.

CONCRETE SEWERS 1908.

Street	From	To	Size	Length Feet	1 S.C.	2 S.C.	Single	C.B.	F.T.	L.H.
Birdsall Rd.	Gurney	Renton	4 ft. x 3 ft. 1 in.	237.5	1		1	2		1
Gurney	Birdsall Rd.	Stadacona	8 ft. 10 in. x 6 ft. 10 in. .	1,691.0		2	3	8		
Helen	Rosedale	Red River	4 ft. x 3 ft. 1 in.	301.0				2		
Helen	Rosedale	Red River	4 ft. x 3 ft. 1 in.	360.5	1	2		2		
Helen	Rosedale	Wood outlet ...	7 ft. 4 in.	102.0						
Jasper	Stadacona	Montcalm	3 ft.	339.0						
			2 ft.	1,191.0	2	1	2	10		
Polson	Powers	Sinclair	6 ft. x 4 ft. 5 in.	3,969.5		2	10	12		
Stadacona	Jasper	Newton	2 ft.	743.0	1		1	4		
				<u>8,934.5</u>						

44

Length in ft. 8,934.5

Length in miles 1.69

Concrete sewers laid 1908 1.69 miles

Pipe sewers laid 1908 5.769 miles

Sewers laid previously 160.473 miles

167.932 miles

WATER MAINS CONSTRUCTED DURING 1908.

45

Streets	From	To	Size	Length in Feet	Hydrants			Intersecting Branch
					Size	No.	Branch length	
Arlington	306' S of Buell	Euclid	4"	140.0	6"	1	7.0	
Argyle	Sutherland	964' N.	6"	1,310.0	6"	2	14.0	
Ashburn	Ellice	assau Hyd only	6"		6"	1	7.0	
Arnold	Bet. W. Pembina & N	Scotia Hyd only	6"		6"	4	28.0	
Athole	Main	Battery Hyd only	6"		6"	2	14.0	
Aberdeen	Sinclair	Keewatin	6"	1,121.0	6"	3	21.0	
Alexander	Worth	Notre Dame	14"	715.0				
Arlington	Yarwood	Eccles	4"	588.0	6"	1	7.0	
Arnold	Mabel	195' S.	6"	195.0	6"	3	21.0	
Austin	Sutherland	Ellice, Hyds.	6"		6"	1	7.0	
Arlington	Sargent	Redwood	6"	282.0	6"	2	14.0	
Brown	Aberdeen	Einarson	6"	827.0	6"	1	20.0	
Banning	Portage	Sargent Hyd.	6"		6"	2	14.0	
Bell & Main	Hyd only	John	6"		6"	1	7.0	
Burnell	Wellington	McPhillips			6"	1	16.0	
Beresford	Nassau	Monkman			6"	3	21.0	
Burrows	Artillery				6"	1	7.0	
Burrows	Battery				6"	1	19.0	
Bannatyne	Emily				6"	1	7.0	
Bell	Wood				6"	1	7.0	
Bannatyne	367' E Brant				6"	1	7.0	
Birdhill Rd.	Renton	Poplar	12"	1,312.6	6"	4	28.0	

WATER MAINS CONSTRUCTED DURING 1908 (Continued)

46

Streets	From	To	Size	Length in Feet	Hydrants			Intersecting Branch
					Size	No.	Branch length	
Birdhill Rd.	Gurney	Kenton	8"	195.6				
Buell	Maryland	Walnut	6"	698.0	6"	3	21.0	6"
Beverly	Sargent	Ellice Hyd.	6"					
College	Conn. Parr		6"	127.0				
College	Andrews	McGregor	6"	664.0	6"	1	7.0	58.0
Clifton	Notre Dame	1,000' S.	12"	1,099.0	6"	2	7.0	
Carlaw	Pembina	John			6"	4	28.0	
College	Andrews				6"	1	7.0	
Church	Main	O'Meara	6"	304.0	6"	1	7.0	70.0
Carter	C. P. R. Main Line ..	Grey	8"	1319.0	6"	3	21.0	
Chestnut	S.E. Cor. Ida				6"	1	14.0	
Dudley	Pembina	Hyd only			6"	1	7.0	
Dudley	Pembina Hwy	Hyd only			6"	1	7.0	
Lundurn Pl.	End of old	Walnut	4"	130.0				
Downing	Notre Dame	900' S.	14"	991.2	6"	2	14.0	
Elgin	Rd. Allow.	East	6"	1,296.0	6"	2	14.0	
Fleet	John	Pembina	6"	270.0	6"	1	7.0	
Gallagher	Rd. Allow.	Blake	6"	2,845.0	6"	8	56.0	
Garlies	Mountain	Machray	6"		6"	3	21.0	61.0
Gladstone								
Gurney	Birdhill Rd.	Levis	12"	1,612.0	8"	3	21.0	
Grey	Carter	Well No. 6	12"	262.0				

WATER MAINS CONSTRUCTED DURING 1908 (continued)

Streets	From	To	Size	Hydrants			Intersecting Branch
				Size	No.	Length Branch	
Higgins							
Haverty							
Hay	Morley	Bartlett	8"				1 58.0
Harvard	Harrow	379' W.	6"				1 11.0
Harvard	Guelph	Rockwood	6"				
Heatherington	Nassau	503' E.	6"				
Heatherington	Nassau	500' W.	6"				
Hespeler	Bhill Rd.	River	12"	8"	4	28.0	
Home	S. Ellice			6"	1	7.0	
Ida	Chestnut	Walnut	6"				1 60.0
Ingersoll	S.E. Cor Richard						
Jubilee	John	715' W.	8"	6"	1	7.0	
Jubilee	710.0 W. John	50' W. Helen	8"	6"	1	7.0	
Jasper	Levis	Grey	12"	6"	11	77.0	2 78.0
John	At Fleet			6"	1	7.0	
Jasper	Montcalm						1 76.0
Jasper	Roland						2 30.0
Jasper	Stadacona						8" 50.0
Jasper	Stadacona						8" 53.0
Jasper	Montcalm						12" 15.0
Jasper	St. E. C. P. R.						
			12"	58.0			3
			12"	38.0			

WATER MAINS CONSTRUCTED DURING 1908 (Continued)

Streets	From	To	Size	Length in Feet	Hydrants			Intersecting Branch
					Size	No.	Length Branch	
Kylemore	492' W. Pembina	Nassau	6"	486.0	6"	1	7.0	
Kylemore	Nassau	225' W.	6"	225.0	6"	4	28.0	5
Logan	East	Thompson	16"	1,475.5	6"	1	7.0	260.0
Machray	W. Aikens .....	.....	6"	666.0	6"	1	7.0	
May	Heaton .....	.....	6"		6"	1	7.0	
Marion	W. Pembina .....	.....	6"		6"	1	7.0	
Morley	Mabel .....	.....	6"	564.0	6"	1	7.0	
Mountain	Garlies .....	.....	6"		6"	1	7.0	
Manitoba	Sinclair	Battery	6"		6"	2	14.0	
Machray	West St. ....	.....	6"		6"	1	7.0	
May .....	.....	.....						6"
Montcalm	Jasper	Newton	10"	620.0	8"	1	7.0	1
Mortimer Pl.	St. Cross	425' W.	4"	463.0	6"	1	7.0	55.0
Montcalm	Newton	Nairn	10"	312.6	8"	1	7.0	
Maplewood	Hay	Fisher	6"	1,385.6	6"	2	14.0	
Magnus	Sinclair	Battery	6"	1,332.0	6"	3	21.0	
McGregor	Anderson	St. John	6"	398.5	6"	1	7.0	
McNichol	Selkirk	Pritchard	6"	235.8	6"			1
McGregor	Dufferin	Jarvis	6"	396.0	6"			17.0
McGregor	Mountain	St. John	6"	330.0	6"	1	7.0	
McGee	N. Livinia	6"		6"	1	7.0	

WATER MAINS CONSTRUCTED DURING 1908 (Continued)

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Streets	From	To	Size	Length in Feet	Hydrants			Intersecting Branch
					Size	No.	Length Branch	
McMillan	John	Nassau			6"	1	7.0	
McMillan	Hugo	Helen			6"	1	7.0	
McKenzie	Redwood				6"	1	7.0	
McDermot	Emily	Monkman			6"	1	7.0	
McDermot	Olivia				6"	1	7.0	
McFarlane								56.0
McArthur								60.0
New	Pump house No. 2		10"	61.6	10"			
Nassau	Heatherington	Carlaw	8"	277.0				
Newton	Stadacona	Roland	8"	2,401.0	6"	6	42.0	
Nassau	Arnold	Morley	8"	231.2	6"	1	7.0	
Nairn	Stadacona	Roland	8"	2,500.0	6"	6	42.0	31.0
O'Meara	Church	20' N.	6"	216.0				
Powers	Dufferin	Jarvis	8"	396.0	8"	1	7.0	
Pine	Portage	260' N. Felix	8"	2,584.0	6"	5	35.0	
Parr	Dairy				6"	1	7.0	
Pine	Portage N.	Wolver	8"	2,314.0	6"	5	35.0	
Powers	Manitoba				6"	1	7.0	
Pt. Douglas								66.0
Pacific	East	Keewatin	6"	1,937.0	6"	4	38.0	
Polson	Powers	454' W.	6"	506.0	6"	1	7.0	
Poplar	Bhill Rd.	Brazier	10"	866.6	8"	1		

WATER MAINS CONSTRUCTED DURING 1908 (Continued)

Streets	From	To	Size	Length in Feet	Hydrants			Intersecting Branch
					Size	No.	Length Branch	
Polson	450' W. Powers	McGregor	6"	838.0	6"	1	7.0	
Portage	S.E. cor. Shore	Hydrant	8"		8"	1	14.0	
Pritchard	McNichol	Shaughnessy	6"	863.6	6"	2	14.0	
Redwood	Brown	Parr	6"	644.0	6"	1	7.0	
Redwood Ave Br ..			12"	240.0				
Redwood Ave Br ..			10"	139.0				
Rosedale Ave	bet. Nassau & John ..	Hyd only			6"	1	7.0	
Redwood Avenue ..					6"	1	7.0	
Rosedale	Helen	Lilac	6"	1,131.0	6"	3	21.0	
Redwood	Main	Red River	10"	757.6	8"	1	7.0	
Renton	Birdhill Rd	Levis	6"	1,531.0	6"	3	21.0	
Redwood	Main	Alkens	10"	334.0				
Selkirk	Stonewall	Keewatin	12"	3,462.6				
Sinclair	Mountain			102.0	6"	1	7.0	14.0
St. John	McGregor	Powers	6"		6"	3	21.0	
Salter	Aberdeen				6"	1	7.0	
Sinclair	College				6"	1	7.0	
Shore	St. James				6"	1	7.0	
Salter	College	Mountain	6"	374.0				
Sherburn	Notre Dame	Wellington	6"	1,923.6	6"	2	14.0	
Strathcona	300' North	Portage	8"	304.0				
Stadacona	Nairn	Jasper	8"	913.0	6"	2	14.0	

WATER MAINS CONSTRUCTED DURING 1908 (Continued)

Street	From	To	Size	Hydrants			Intersecting Branch
				Length in Feet	Size	No.	
Simcoe	South E. Cor Sargent				6"	1	
Sinclair	Redwood				6"	1	
Telfer	Portage	560' S.	6"	567.0		1	
Talbot	Stadacona	Roland	14"	2,463.0		5	
Telfer	370' S. Portage				6"	1	
William	Emily				6"	1	
Wellington	Simcoe				6"	1	
Weatherdon	Pembina				6"	1	
William	Emily	Nassau			6"	1	
Wellington	Cor. Beverly	Monkman			6"	1	
Wardlow	159' W. Wentworth ..		6"	301.0		1	
Wardlow	End of old		6"	100.0		1	
Xante	Pacific						
Circulating W.P. for	New Condenser						
		Intersecting Branches.....		70,234.1		195	26
				1,179.0			1,179.0
				71,413.1			

Water Mains laid during 1908.

Length in feet.....71413.1

" miles..... 13.525

Hydrants 205

Water Mains laid, 1908 13.525 miles

" " "previously 171.196 "

Total184.721 "

HIGH PRESSURE MAINS LAID IN 1908.

Street	From	To	Size	Length Feet
Alexander	Martha	Transfer Track	10"	1,911.4
Argyle	Higgins	Henry	10"	792.0
Amy	Pacific	James	12"	387.0
Henry	Maple	Argyle	10"	590.0
Henry	Lilly	Maple	12"	129.0
Henry	Main	Princess	10"	1,111.4
Lilly	Henry	Pacific	12"	996.6
Lombard	Main	Victoria	10"	899.0
Maple	Higgins	Henry	12"	554.2
Main	South of Notre	Dame East	12"	170.0
Main	Across Main ...	Water	10"	91.0
Main	Across Main ...	N. Dame East	10"	104.0
Main	Across Main ...	Portage East	10"	91.0
Main	Across Main ...	Lombard	10"	108.0
Notre Dame .	Main	Victoria	10"	573.0
Pacific	Amy	Lilly	12"	200.0
Princess	Logan	Higgins	12"	618.6
Robert	Lilly	Transfer Track	10"	542.0
Victoria	Lombard	Notre Dame	10"	708.6
				10,576.8

Length feet, 10576.8.....2.003 miles

Previously laid.....4.997 "

Total7.000 "

HYDRANTS INSTALLED 1908.

Size	Street	Location
6"	Andrews	S.E. corner Anderson
6"	Ashburn	362' N. of N. line of Ellice
6"	Ashburn	724' N. of N. line of Ellice
6"	Arnold	460' W. of W. line of Pembina
6"	Athole	550' E. of E. line of Main
6"	Athole	556' W. of W. line of Mac
6"	Athole	S.E. corner Mac
6"	Athole	437' E. of E. line of Mac
6"	Aberdeen	300' W. of W. line of Sinclair
6"	Aberdeen	300' W. of W. line of Artillery
6"	Alexander	S.W. corner Worth
6"	Alexander	522' E. of E. line of Keewatin
6"	Alexander	S.E. corner of Keewatin
6"	Austin	S.E. corner Sutherland
6"	Arlington	300' S. of S. line of Buell
6"	Arlington	320' S. of S. line of Sargent
6"	Arlington	640' S. of S. line of Sargent
6"	Arlington	320' N. of N. line of Ellice
8"	Birdshill Road	S.E. corner of Gurney
8"	Birdshill Road	S.E. corner of Mighton
8"	Birdshill Road	S.E. corner of Dearborn
8"	Birdshill Road	S.E. corner of Gordon
8"	Birdshill Road	S.E. corner of Hart
6"	Brown	S.E. corner Redwood
6"	Banning	S.E. corner Einarson
6"	Banning	405' S. of S. line of Einarson
6"	Bell	N.W. corner Main
6"	Burnell	438' S. of S. line of Wellington
6"	Burnell	441' N. of N. line of Sargent
6"	Beresford	350' W. of W. line of John
6"	Burrows	S.E. corner Prince
6"	Burrows	436' W. of W. line of Prince
6"	Burrows	440' E. of E. line of Prince
6"	Burrows	S.E. corner Artillery
6"	Bannatyne	355' W. of W. line of Emily
6"	Bannatyne	370' W. of W. line of Monkman
6"	Bell	10' E. of E. line of Wood
6"	Beverley	410' S. of S. line of Sargent
6"	Carruthers	Centre of Block Walker & Powers
6"	Carruthers	Centre of Block Powers & Copp
6"	Carruthers	S.W. corner of Walker

HYDRANTS INSTALLED 1908.

Size	Street	Location
6"	College	Centre of Block McGregor & Andrews
6"	Clifton	428' S. of S. line of Notre Dame
6"	Clifton	875' S. of S. line of Notre Dame
6"	Carlaw	S.W. corner Nassau
6"	Carlaw	S.W. corner Pembina
6"	Carlaw	455' E. of E. line of Nassau
6"	Carlaw	350' W. of W. line of Nassau
6"	College	S.W. corner Andrews
6"	Church	S.E. corner Main
6"	Chestnut	N.E. corner Ida
6"	Dudley	S.E. corner Pembina St.
6"	Dudley	S.E. corner Pembina Highway
6"	Downing	455' S. of S. line of Notre Dame
6"	Downing	910' S. of S. line of Notre Dame
6"	Elgin	S.E. corner Langford
6"	Elgin	350' East of Langford
6"	Fleet	S.W. corner Pembina Highway
6"	Gallagher	at Road Allowance
6"	Gallagher	S.E. corner Electa
6"	Gallagher	500' E. of E. line of Blake
6"	Gallagher	S.E. corner Quelch
6"	Gallagher	S.E. corner Vincent
6"	Gallagher	300' W. of W. line of Electa
6"	Gallagher	260' E. of E. line of Quelch
8"	Gurney	S.E. corner Levis
8"	Gurney	S.E. corner Brazier
8"	Gurney	441' E. of E. line Birdshill Road
8"	Hespeler	S.E. corner Birdshill Road
8"	Hespeler	324' W. of E. line Birdshill Road
8"	Hespeler	648' W. of E. line Birdshill Road
8"	Hespeler	972' W. of E. line Birdshill Road
6"	Home	368' S. of S. line Ellice
6"	Jubilee	705' W. of E. line John
6"	Jubilee	S.E. corner Helen
6"	John	S.E. corner Fleet
6"	Jasper	S.E. corner Stadacona
6"	Jasper	342' E. of E. line Stadacona
6"	Jasper	S.E. corner Allan
6"	Jasper	428' E. of E. line Allan
6"	Jasper	S.E. corner Montcalm
6"	Jasper	283' W. of W. line of Roland

HYDRANTS INSTALLED 1908.

Size	Street	Location
6"	Jasper	S.W. corner Roland
6"	Jasper	S.E. corner Roland
6"	Jasper	435' E. of E. line Roland
6"	Jasper	283' W. of W. line Grey
6"	Jasper	60' W. of W. line Grey
6"	Logan	S.W. corner Blake
6"	Logan	S.W. corner Milton
6"	Logan	S.E. corner Worth
6"	Logan	S.W. corner Thompson
8"	Montcalm	S.E. corner Talbot
8"	Montcalm	S.E. corner Newton
8"	Main (W. side)	Centre of Block James & Market
8"	Main (W. side)	N.W. corner William
8"	Main (W. side)	20' N. of N. line James
8"	Main	60' S. of S. line of Water
8"	Main	opposite S.E. corner Notre Dame East
8"	Main	S.W. corner Portage
6"	McGregor	S.E. corner John
6"	Mountain	41' W. of W. line Sinclair
6"	Machray	S.E. corner Aikens
8"	Main (W. side)	opposite S. line Lombard
8"	Main (W. side)	N.W. corner McDermot
6"	May	opposite S.W. corner Heaton
6"	McGee	288' N. of N. line Livinia
6"	Merrion	225' W. of W. line Pembina
6"	McMillan	250' W. of W. line Hugo
6"	Main	Centre of Block Logan & Alexander
6"	McMillan	350' W. of W. line Nassau
6"	Morley	S.E. corner Mabel
6"	Mountain	S.W. corner opposite Garlies
6"	McKenzie	N.E. corner Redwood
6"	Manitoba	350' W. of W. line Simcoe
6"	Manitoba	300' W. of W. line Artillery
6"	Manitoba	S.E. corner Powers
6"	Machray	S.W. corner Charles
6"	McDermot	422' W. of W. line Emily
8"	Main (W. side)	N.W. corner Higgins
6"	McDermot	S.E. corner Olivia
6"	Mortimer Place	S.W. corner St. Cross
6"	Maplewood	S.W. corner Casey
6"	Maplewood	S.W. corner Fisher

HYDRANTS INSTALLED 1908.

Size	Street	Location
6"	Magnus	300' W. of W. line Sinclair
6"	Magnus	S.E. corner Artillery
6"	Magnus	300' E. of E. line Battery
6"	Nairn	S.E. corner Stadacona
6"	Nairn	325' E. of E. line Stadacona
6"	Nairn	318' W. of W. line Allan
6"	Nairn	S.W. corner Allan
6"	Nairn	399' W. of W. line Montcalm
6"	Nairn	S.W. corner Roland
6"	Newton	S.E. corner Stadacona
6"	Newton	319' E. of E. line Stadacona
6"	Newton	256' W. of W. line Allan
6"	Newton	S.E. corner Allan
6"	Newton	436' E. of E. line Allan
6"	Newton	305' E. of E. line Montcalm
6"	Newton	S.E. corner Roland
8"	Nassau	S.E. corner Arnold
6"	Pacific	300' E. of E. line Worth
6"	Pacific	300' W. of W. line Worth
6"	Pacific	300' W. of W. line East
6"	Pacific	300' E. of E. line Keewatin
6"	Powers	N.E. corner Jarvis
6"	Pine	471' N. of N. line Portage
6"	Pine	867' N. of N. line Portage
6"	Pine	1,275' N. of N. line Portage
6"	Pine	1,675' N. of N. line Portage
6"	Pine	1,991' N. of N. line Portage
6"	Parr	128' N. of N. line College
6"	Pine	2,323' N. line of Portage
6"	Parr	S.E. corner Anderson
6"	Polson	418' W. of W. line of Powers
8"	Portage	N.W. corner Strathcona
8"	Portage	S.E. corner Shore
6"	Pritchard	S.W. corner McNichol
6"	Pritchard	400' W. of W. line of McNichol
8"	Poplar	428' E. of E. line Birdshill Road
6"	Redwood	S.W. corner Parr
6"	Rosedale	Centre of Block John & Helen
6"	Rosedale	350' W. of W. line John
6"	Rosedale	S.W. corner Helen
6"	Rosedale	356' W. of W. line Helen

HYDRANTS INSTALLED 1908.

Size	Street	Location
6"	Rosedale	711' W. of W. line Helen
6"	Rupert	N.E. corner Louise
8"	Redwood	300' E. of E. line Main
6"	Renton	250' E. of E. line Birdshill Road
6"	Renton	260' W. of W. line of Brazier
6"	Renton	S.W. corner Levis
6"	Selkirk	N.W. corner Van Horne
6"	Selkirk	N.W. corner McNichol
6"	Selkirk	Centre of Block Van Horne & McNichol
6"	Selkirk	Centre of Block Van Horne & McPhillips
6"	Selkirk	Centre of Block McNichol & Shaughnessy
6"	Selkirk	N.W. corner Shaughnessy
6"	Selkirk	Centre of Block Stonewall & Shaughnessy
6"	Selkirk	N.W. corner Stonewall
6"	St. Johns	S.E. corner Andrews
6"	St. Johns	275' W. of W. line of Andrews
6"	St. Johns	330' E. of E. line Andrews
6"	Salter	N.E. corner Aberdeen
6"	Sinclair	S.E. corner Redwood
6"	Sinclair	S.E. corner College
6"	Shore	S.W. corner St. James Place
6"	Sherburn	371' S. of S. line Notre Dame
6"	Sherburn	S.E. corner Richard
6"	Sherburn	S.E. corner Garfield
6"	Sherburn	N.E. corner Wellington
6"	St. Johns	S.E. corner McKenzie
6"	Simcoe	S.E. corner Sargent
6"	Talbot	286' E. of E. line Stadacona
6"	Talbot	S.E. corner Allan
6"	Talbot	404' E. of E. line Talbot
6"	Talbot	382' E. of E. line Montcalm
6"	Talbot	S.W. corner Allan
6"	Telfer	159' S. of S. line Portage
6"	Telfer	587' S. of S. line of Portage
6"	William	S.E. corner Emily
6"	Wellington	S.E. corner Simcoe
6"	Weatherdon	457' W. of W. line Pembina

HYDRANTS INSTALLED 1908.

Size	Street	Location
6"	William	357' W. of W. line Emily
6"	Wardlow	243' W. of W. line of Wentworth
6"	Wellington	S.E. corner Beverley
6"	Xante	S.E. corner Pacific

SUMMARY.

6"— 177

8"— 28

 205 installed in 1908.

1,109 installed previously.

 1,314 total to date.

GRADING.

Street	From	To	Length Feet
Lane between Aikens & Charles	College	Boyd	540
Lane between Aikens & Charles	Boyd	Redwood	600
Alloway	Maryland	End of Avenue ..	520
Andrews	Boyd	John	910
Lane between Agnes & McGee	Sargent	Wellington	1,200
Alexander	C. P. R. Pembina Br.	Worth	2,200
Brown	Stella	Mountain	1,200
Beresford	Pembina	John	3,100
Crescent Road	Wellington Cres. .	C. N. R. Track ..	9,300
Centre	Portage	Assiniboine	750
Lane between Chestnut & Walnut	Preston	Broadway	300
Elgin	East	Road Allowance ..	1,000
East	Ross	William	500
Lane between Furby & Langside	Broadway	Cornish	2,370
Gallagher	Gov. Road Allow- ance	Blake	2,500
Hespler	Birdhill Rd.	Redwood Bridge ..	2,500
Henry	Lulu	Trinity	2,300
Lane between Jasper & Talbot	Stadacona	Roland	2,400
Lane between Jasper & Tweed	Roland	End of Lane	1,930
Levis	Poplar	Chalmers	1,100
Lane between Manito- ba & Pritchard	Charles	Aikens	600
Lane between Newton & Talbot	Stadacona	Roland	2,400
Ross	Road Allowance ..	Keewatin	2,700
Rosedale	Pembina	Helen	2,400
Lane between Renton & Vaudreuil	Levis	Vaudreuil	1,300
St. James	Portage	C. N. R. Bridge ..	900
Sutherland Avenue Ex- tension	Agnus to	C. P. R. dump..	250

GRADING (Continued)

Street	From	To	Length Feet
Thompson	Logan	C. P. R.	700
Lane between Victor & Toronto	Ellice	Livinia	1,150
			<hr/> 49,620

Length lineal feet 49,620

Length in miles 1908 9.39

Length in miles previously 192.37

Total 201.76 miles

The following is an abstract of the quantities of the principal City Public Works as on December 31st, 1908.

	Constructed in 1908 (miles)	Total Miles to Dec. 31st, 1908
Sewers	7.459	167.932
Pavements:—		
Asphalt	6.506	49.895
Macadam	1.903	37.790
Block	2.21	25.06
Artificial stone walks	6.006	73.877
Plank walks	7.271	306.618
New grading	9.39	201.76
Water mains (domestic)	13.525	184.721
Water mains (H.P.)	2.003	7
Fire hydrants (domestic)	205	1,314
Fire hydrants (H.P.)		79

Winnipeg, March 29, 1909.

Col. H. N. Ruttan,

City Engineer, W'pg.

Dear Sir:—

Herewith I beg to submit report on work done in the Plumbing Inspection Department; and in connection with the flushing of sewers during the year 1908.

Permits.

Permits were issued for the installation of plumbing in 1,408 buildings, 630 of which were installed without house traps, a percentage of 44.74 of the whole.

Abstract.

Month	No. of Permits	No. of Buildings	No. of systems install'd without house traps	Percentage of untrapped systems
January	51	51	25	49.0
February	48	48	30	62.5
March	56	56	29	51.7
April	105	105	58	55.2
May	177	177	83	46.8
June	175	175	75	42.8
July	179	179	77	43.0
August	160	160	67	41.8
September	139	139	49	35.2
October	154	154	58	37.6
November	108	108	51	41.2
December	56	56	28	50.0
Total	1,408	1,408	630	44.74

Fees.

Fees to the amount of \$1,417 were collected for permits issued in terms of By-law No. 4281.

Inspections.

8,374 inspections were made of plumbing work according to the following detail and 2,740 defects were discovered and rectified.

Month	Water tests	Subsequent inspections	Smoke tests	Miscellaneous inspections	Defects discovered & rectified
January ..	153	473	3	15	154
February .	61	371	1	11	151
March	66	650	4	23	188
April	117	606	6	27	187
May	194	500	8	15	205
June	230	564	3	32	242
July	238	573	5	38	299
August ...	194	506	11	38	261
September	160	557	5	10	242
October ...	213	448	5	22	309
November	137	542	4	30	377
December	77	377	13	38	225
Total	1,840	6,167	68	299	2,740

Smoke tests.

68 applications of the smoke test were applied to plumbing systems, 50 of which were old, and 83 defects were discovered and made good.

Plumbing installed by the City.

Plans and specifications were prepared and the plumbing installed in 40 houses by the City, where the owners could not afford to have the work done themselves, the costs of which are charged against the properties as taxes.

The total cost of installing plumbing in 40 houses was \$4,267.92 making an average cost per house of \$106.69 which includes sewer connection and small cellars in some cases.

Plans and specifications were also prepared for the installation of plumbing in the City Asphalt Plant, the City Market and a steam heating system for the Quarantine Hospital, Brookside, all of which have been completed with the exception of the City Market job, which has been delayed on account of a number of the cellars being filled with vegetables.

Cost of installing plumbing in City Asphalt Plant was\$ 91.95
 Cost of installing steam heating system and repairing plumbing
 in Quarantine Hospital was 1,361.56

Sewer Flushings.

Flush Tanks. 419 tanks were operated during the year and flushed every night except in wet weather. There were also one or two gangs flushing with the hose regularly. The following is a statement of the amount of water used for this purpose.

Month	Tank flushings		Hose flushings		Total Gallons
	Discharges	Gallons of water	Minutes	Gallons of water	
Jan.	11,084	2,959,428	16,400	1,640,000	4,599,428
Feb.	17,232	4,600,944	33,680	3,368,000	7,968,944
March	19,969	5,332,725	30,685	3,068,500	8,400,223
April	1,548	413,583	1,715	177,500	591,083
May	4,355	1,162,785	7,005	700,500	1,863,285
June	7,293	1,947,231	9,405	940,500	2,887,730
July	11,696	3,122,832	10,990	1,099,000	4,221,832
August ...	12,198	3,256,866	12,285	1,228,500	4,585,366
Sept.	12,354	3,298,518	9,100	910,000	4,208,518
Oct.	11,572	3,089,724	11,935	1,193,500	4,283,224
Nov.	16,719	4,463,973	16,999	1,699,900	6,162,973
Dec.	10,006	2,671,602	9,050	905,000	3,576,602

Sewer ventilation test.

Extract of observations and cost of Webb Lamps and City Sewer Ventilator to December 31, 1908.

	Main and Bannatyne	Assiniboine	Charlotte and Bannatyne
No. of days observed	277	287	30
No. of times out	3	7	1
No. of times sewer vent frozen	8	11	
No. of times gas pipe frozen	17	19	
No. of times no air passing through. Other cause than from freezing	66	94	2
Maximum cubic ft. per hour.	April 10, '08. 4,815	March 4, '08. 3,175	Nov. 25, '08. 2,732

	Main and Bannatyne	Assiniboine	Charlotte and Bannatyne
Average cubic ft. per hour ..	988	672	2,041
Minimum cubic ft. per hour	March 16, '08	March 12, '08.	Dec. 10, '08.
	17	52	1,578
Diameter of sewer	5 ft.	4 ft.	2 ft. 6 in.
Min. velocity in sewer feet per minute .....	.015	.07	5.50
Max. velocity in sewer feet per minute	4.07	4.22	9.30
Capital cost	\$252.06	\$252.06	\$61.89
Cost of maintenance	\$145.01	\$145.01	\$13.32
No. of days working	341	356	36
Cost of maintenance per day	\$0.42	\$0.42	\$0.37

Remarks.

Re Lamps on Main St. and Assiniboine Ave.

When the wind is from the south or south-east there is practically no air passing through the vents.

Dr. Leeming, City Bacteriologist made a test of air after passing through these lamps and reported that the bacteria and odor was completely destroyed.

The following is a copy of Dr. Leeming's report of the bacteriological test conducted on City Sewer Ventilator at the corner of Charlotte St. and Bannatyne Ave.

Winnipeg, February 24th, 1909.

Col. H. N. Ruttan,

City Engineer, W'pg.

Dear Sir:—

As requested by you, I, last Monday, conducted a series of experiments on the City Ventilator at the intersection of Charlotte St. and Bannatyne Ave.

I exposed plates of blood serum, gelatin, and agar-agar to the sewer air before and after it passed over the burner in the ventilator. The plates were exposed for the period of one (1) hour. As we had not an Anemometer with us, I am unable to state accurately how much air

passed over the plates, but the Plumbing Inspector informed me that 2,000 ft. per hour was the average volume, so we can assume that that amount passed over the plates during the test.

On those plates exposed to the raw sewer air, there was an innumerable growth of bacteria. The number was so great as to be classified as "uncountable". I have not differentiated the various micro-organisms, as I thought that you would not particularly desire such information.

On the plates exposed to the burnt air, i.e. to the air after it had passed over the burner, there was absolutely no bacterial growth, proving the air to be sterile.

I found the temperature of the air, as it emerged at the outlet, to be 270 degrees F. Of course, the temperature of the air immediately after passing over the burner would be considerably higher, and such a temperature would be sufficient to kill all bacteria.

The burning of the air also destroyed the foul odor characteristic of sewer air.

My experiments lead to the conclusion that the ventilator is an efficient means for destroying micro-organisms present in sewer air, and for deodorizing the same.

I am, Sir,

Yours truly,

(Sgd.) J. H. Leeming, City Bacteriologist.

APPENDIX: Location and costs of plumbing installed by City.

List	Location	Cost Plumbing & Sewer
18	304 Arnold Ave.	\$ 122.05
18	310 Arnold Ave.	124.60
18	69 Morley Ave.	131.50
18	320 Home St.	156.80
18	459½ Pacific Ave.	93.50
18	461 Pacific Ave.	95.50
18	10½ Sutherland Ave.	100.40
18	138 Angus St.	110.60
18	140 Angus St.	107.60
18	900 Selkirk Ave.	112.40
19	491 Rathgar Ave.	107.85
19	1211 Alexander Ave.	103.00
19	104 Inkster Ave.	141.70
19	135 Stephen St.	125.45
19	40 Hallett St.	80.00
19	287 Magnus Ave.	89.95
19	491 Flora Ave.	11.65
19	607 Redwood Ave.	78.00
19	603 Redwood Ave.	98.90
19	631 Redwood Ave.	90.10
19	717 Jarvis Ave.	114.65
19	721 Alfred Ave.	166.10
19	853 Pritchard Ave.	97.25
19	854 Burrows Ave.	108.45
19	334 Arnold Ave.	127.30
20	Langside St.	81.49
20	430 McMicken St.	89.96
20	1171 Alexander Ave.	79.45
20	290 Milton St.	104.36
20	554 Carlaw Ave.	99.56
20	84 Edward St.	78.33
20	39 Powers St.	82.28
20	130 Matheson Ave.	152.29

Appendix: Location and costs of plumbing installed by City. (Cont'd)

List	Location	Cost Plumbing & Sewer
20	Battery St.	10.00
21	475 King & rear houses	524.45
21	1599 Ross Ave.	86.15
21	1461 Elgin Ave.	97.03
21	517 Stella Ave.	81.12
21	517 Stella Ave. Rear house	109.50
13	91 Inkster Ave. (alterations)	38.00
Total		\$4,409.07

I am

Your obedient servant,

JAS. SMITH, Plumbing Inspector.

CITY OF WINNIPEG TESTING LABORATORY.

SUMMARY OF TESTS MADE IN 1908:

Name.	No. Tests Made.
Cement	325
Coal	327
Ash	19
Pavements.—Surface	145
Flux	11
Asphalt	49
Sand	260
Lubricating oils	41
Gas	328
Water	73
<hr/>	
Total	1,578

REPORT OF THE CITY OF WINNIPEG TESTING LABORATORY. CEMENT.

Summary of Tests Made During 1908.

Name	Samples	Tensile Neat			Tensile 1x3		Fineness	
		1 Day	7 Days	28 Days	7 Days	28 Days	200	100
Sun	72	165	464	571	105	150	20.7	6.5
Imperial	141	229	592	680	189	233	19.6	5.9
Commercial	13	228	245	260	86	123	15.9	5.3
Alpena	38	253	483	603	110	171	29.3	10.1
Lehigh	9	80	281	536	130	175	21.6	8.3
Samson	22	195	422	439	162	162	21.5	7.3
Monarch	13	120	362	444	77	115	19.5	7.0
Northampton	10	86	352	580			22.6	7.2
International	5	296	616	667	152	178	17.4	5.8
Dobson & Jackson	2	136	459	548	104	140	25.0	10.0
Eckshaw	1	230	600	648	146	255		
Vulcan	1	275	357	810	100	195	20.8	6.8
National	1	113	360	510	108	230		
Star	1	75	489	705	120	215	27.8	11.6
Medusa	1	355	500	822	170	297	21.4	5.2
Colonial	1	200	603	740			26.0	7.0
Lafarge	1	141	252	333		250	4.8	.4
Keenes	2	57	309	144	80	80	.4	
Edison	1	101	472	558	170	260	12.4	3.8
Hercules	1	65	650	640	172	200	27.0	10.8

CITY TESTING LABORATORY—Continued

No.	Sp. G.	Fineness		Setting		Per cent.	Strength			Sand Test	
		200	100	In.	Fin.	Water	1d.	7d.	28d.	7d.	28d.
Imperial Cement 1908											
1373	3.033	16.4	6.0	180	420	24	300	582	680	149	264
1374		16.2	4.8	90	210	24	192	617	754	205	270
1375	2.992	19.0	5.6	90	210	25	181	375	276	185	265
1376	3.005	17.4	4.4			24	225	508	672	195	220
1377	3.033	18.2	3.6	150		24	175	517	647	175	225
1378	3.019	20.0	5.4	135		24	235	625	795	147	265
1379	3.122	13.4	3.8	120		24	205	505	653	210	265
1380	3.062	18.8	5.0	100		24	175	597	751	165	242
1381	3.168	19.2	5.2	98		24	225	577	715	190	147
1382	3.122	16.6	3.6	120		24	345	640	700	165	225
1383	3.062	16.6	3.6	135		24	227	640	750	170	215
1384	3.005	18.2	3.8	120		24	210	600	606	130	197
1385	3.137	17.2	4.4	90	180	24	235	590	658	200	280
1386	3.107	13.0	2.8	150	240	24		575	647	175	236
1387	3.107	17.6	5.2	135	180	24	310	535	805	222	293
	3.010										
1389	2.977	22.6	9.6	195	180	24	210	680	660	198	250
1388	3.019	19.6	5.8	180	120	24	260	532	885	190	210
1390	3.019	19.2	6.4	175	120	24	190	755	667	184	225
1391	3.005	19.0	6.2	210	105	24	205	600	733	186	260
1392	3.005	17.8	4.4	120		24	240	639	635	190	255
1393	3.033	20.0	7.2	135		24	230	709	630	215	283
1394	2.977	20.2	7.2	150		24	315	724	750	301	356
1558		22.6	6.0	270	460	22	198	585	780		205
1559		21.0	4.8	85	265						
1560		19.8	4.4	85	265						
1561		22.6	8.6	85	260						
1562		18.6	4.6	225	400			565	682	159	205
1563		22.0	4.6	210	390	22		570	655	145	167
1565		19.0	5.4	225	315	22	260	603	763		
1566		18.0	6.2	210	300	22	200	617	717		
1567		23.4	5.0	120	240	22	160	630	755		
1568		20.6	4.8	120	240	22	160	582	782		158
1569		24.4	6.4	210	480	22	225	643			123
1570		25.0	6.0	210	460	22	190	595	580		155
1571		24.0	9.0	240	450	23	160	564	652		220
1572		23.6	6.8	300	480	22	200	674	773	213	180

CITY TESTING LABORATORY—Continued

No.	Sp. G.	Fineness		Setting		Per cent.	Strength			Sand Test	
		200	100	In.	Fin.		Water	1d.	7d.	28d.	7d.	28d.
Imperial Cement 1908											
1573		23.6	7.2	270	450	22	188	645	605	256	203
1574		24.0	6.0	165		22	265		273		190
1575		23.2	6.8	135		22	220		333		
1576		20.6	6.8	105			215		187		
1577		23.0	6.0	360							
1578		23.4	7.4	330							
1579		21.0	5.2	300							
1622							263	655	835		
1623							310	665	710		
1624							383	580	680		
1625							355	720	835		
1626							290	635	745		
1627							325	577	625		
1628							238	495	668		
1629							345	763	795		
1630							270	705	675		
1631							335	710	685		
1632							255	650	830		
1633							335	663	850		
1634							310	655	740		
1635							278	556	750		
1588		20.0	6.0					285	675		
1589							139		450		
1591							118		675		
1592							120		770		
1594							65		578		
1595							97		800		
1596							110		665		
1597							68		733		
1598		17.4	6.0				96		727		
1599							95	500	683		
1608								423	685		
1609									70	528	798
1611		22.4	7.0				87	535	640		
1612		23.0	7.6				125	483	710		
1613		23.6	7.6				82	482	740		
1614							85	357	638		

CITY TESTING LABORATORY—Continued

No.	Sp. G.	Fineness		Setting		Per cent.	Strength			Sand Test	
		200	100	In.	Fin.	Water	1d.	7d.	28d.	7d.	28d.
Sun Cement. 1908.											
1500		18.6	4.6	255		27	114	346	605	90	
1501		20.0	6.0	240		27	87	368	530	85	145
1502		17.6	5.0	165			168	431	665		
1503		21.4	7.0	150			232	477	600	85	106
1504		23.6	8.0	140			296	506	677	90	
1505		15.4	4.0	130			196	442	643	100	91
1506		16.8	5.0	120			167	375	610	88	158
1507		22.0	7.4	370			224		613	77	104
1508		20.0	6.0	365			215		600	85	
1509		20.0	5.2	340			289		600	77	117
1510		21.6	7.0	315			245		650	72	112
1466		20.0	7.0	100	340		150	580	665	95	175
1467		22.0	7.0	195	375		405	525	490	130	175
1468		20.4	6.0	180	360		440	625	670	135	190
1469		21.0	6.0	210			75	465	445	90	150
1470		22.6	6.0	180			70	500	575	100	182
1471		12.8	2.6	180			100	450	672	90	190
1472		20.0	6.8	135		27	100	335	680	142	195.
1473		16.8	4.8	315	425	27	90	455	525	80	135
1474		20.0	5.0	330	390			433	595	108	200
1475		20.0	6.0					465	555	135	210
1476		24.0	9.6	270	480	27	100	400	613	90	175
1477		21.0	6.0	270	470	27	108	365	505	85	155
1478		20.6	6.6				120	445	630	105	185
1479		22.8	8.0				123	354	600	120	205
1480		21.6	7.0				118	437	625	90	200
1481		22.0	7.6	270	510	27	158	517	808	125	190
1482		15.4	4.0	240	480	27	212	390	675	88	170
1485		21.0	8.0	170	440	27	90	356	590	87	148
1486		18.8	5.0	120	390	27	160	536	640	88	155
1487		20.0	6.0	270	480	27		520	620	165	215
1488		19.0	5.4	235	485	27		530	642		

CITY TESTING LABORATORY—Continued

No.	Sp. G.	Fineness		Setting		Per cent.	Strength			Sand Test	
		200	100	In.	Fin.	Water	1d.	7d	28d.	7d.	28d.
Imperial Cement.											
1908.											
1395	3.019	21.8	6.8	135		24	280	675	655	188	230
1396	3.019	19.0	6.0	135		24	230	635	656	195	340
1397	3.048	17.6	5.2	120		25	235	645	610	168	230
1398	3.035	21.6	7.4	195		24	288	590	620	170	290
1399	3.019	18.8	7.0	60		25		490	585	185	205
1400	2.997	21.8	6.4	150		25		396	730	120	210
1403							195	400	440	150	203
1420		19.2	8.6	180	240	24	220	610	670	183	240
1421		19.8	9.6	160	240	24	210	650	681	205	280
1422		19.2	8.4	180		24	200	666	600	163	220
1523		23.0	8.4	120	330	26	189		463		125
1545		22.4	3.8	225	390	22	330				98
1546		25.2	5.8	210	420		290				
1547		16.0	3.4	210	420		195	585	677	128	145
1548		25.2	5.8	190	400		195	582	530	168	117
1549		16.4	4.2	175	400		200	575	695	168	205
1550		18.0	4.8				185	575	642	180	187
1551		16.6	4.8				210	600	585	180	188
1553		18.8	5.6	225	400	22	95	635	718	123	200
1555		18.8	5.4	220	400	22	260	605	762	170	168
1556		18.0	6.4	210	400	22	250	625	668	113	148
1557		21.4	6.0	270	480	22	265	605	755		238
1615							313	738	768		
1616							250	638	713		
1617							315	678	712		
1618							230	589	713		
1619							270	700	740		
1620							480	580	728		
1621							308	600	670		

CITY TESTING LABORATORY—Continued

No.	Sp. G.	Fineness		Setting		Per cent.	Strength			Sand Test	
		200	100	In.	Fin.	Water	1d.	7d.	28d.	7d.	28d.
Sun Cement.											
1908.											
1511		36.0	15.0	210	510	27	90	449	580	135	115
1512		21.4	6.6	195	495		100	521	476	75	
1513		18.0	4.8	210	480		90	424	390		182
1514		23.2	7.6	120		27	130	530	500		138
1515		23.0	7.0	135			120	499	515	90	
1516		31.8	14.8	180			202	529	400	92	
1517		20.4	6.0	105			127	527	504	90	
1518		20.6	6.4	150			100	444	475	125	
1519		23.2	8.8	150		27		514	515	87	
1520		23.0	7.4	150				515	600		
1521		17.6	4.4	135				430	520		
1522		28.0	11.0	180		27	200	455	701		
1554		21.2	4.6	225	400	26	105	540	673	135	155
1489		20.8	6.0	240	450	27		497	664		
1490		24.0	8.8	240	480	27	50	417	635		
1491		16.8	4.0	210	450	27	125	546	625		
1492		17.6	4.8	300	480	27	165	442	680		
1493		20.0	6.0	285	465	27	135	420	600		
1494		21.0	7.6	270	450	27	215	532	545		
1495		20.6	6.0	300	420	27	132	378	543		
1496		20.0	5.4	270	390	27	157	486	655		
1497		16.6	4.6	300		27	115	412	630		
1498		22.0	7.0	285		27	120	440	625		
1499		18.0	5.0	270		27	115	349	633		
1401	3.005	16.4	4.4	120	300	27	157	470	670	110	175
1454		19.0	5.6	270	400	27	163	510	620	210	215
1455		18.0	5.0	250	460	27	170	535	655	125	160
1456		20.4	5.6	260	450	27	185	410	425	100	203
1457		22.4	8.6				162		575		143
1458		22.8	8.8				168		565		150
1459		16.8	6.4				193	360	480	95	160
1460		22.4	10.0	150	280		285	620	690	135	195
1461		27.2	10.0	120	250		390	545	615	145	197
1462		14.4	3.4	120	250		255	480	650	110	165
1463		20.0	5.2	240			200	475	690	115	124
1464		25.4	8.0	240			190	425	555	70	100
1465				120	360		165	630	705	150	195

CITY TESTING LABORATORY—Continued

No.	Sp. G.	Fineness		Setting		Per cent. Water	Strength			Sand Test	
		200	100	In.	Fin.		1d.	7d.	28d.	7d.	28d.
Dobson & Jackson. 1908.											
1453				330	480	26	175	480	515	125	135
1483		25.0	10.0	210	390	23	100	437	580	82	145
Commercial Cement. 1908.											
1441		14.0	3.4	75	85	27	175	230	220	95	90
1442				70	85	27	235	215	180	98	110
1443				50	85		233	215	250	87	130
1445		12.4	2.6	45	45		215	240	277	55	82
1446		15.4	3.4	40	40		183	195	200	33	80
Samson Cement. 1908.											
1404							200	220	300	145	185
1405							175	410	440	160	180
1406							245	450	525	157	245
1407		24.4	7.2	270		24	213	420	540	150	150
1408		23.8	9.8	256		24	177	415	380	150	180
1409		23.2	9.8	275	360	24	235	410	460	145	180
1410		23.6	9.2	255	360		245	490		190	160
1411		21.8	7.8	265	360		210	450	470	140	145
1412		23.8	7.2	310	360		247	395	460	160	130
1413		23.2	6.8	305	360		283	490	512		150
1414		20.8	5.4	300	360		213	540	295	180	200
1415		24.6	11.0	300	360		195	405	400		120
1416		16.0	5.4				195	390			60
1417		21.0	6.0				170	425	660		165
1418		21.2	6.6				205	330	355	190	200
1419		22.4	7.4				205	500	300	250	
1526		25.2	8.4	120	300	27	127		459		122
1527		18.8	6.0	150	300	26	120				178
1528		18.0	4.0	90		26	120	385	463		
1536		13.8	7.0				155	435		115	
1537		21.8	6.6				150	400		130	

CITY TESTING LABORATORY—Continued

No.	Sp. G.	Fineness		Setting		Per cent. Water	Strength			Sand Test	
		200	100	In.	Fin.		1d.	7d.	28d.	7d.	28d.
Monarch Cement											
1535		22.6	8.8	145	300		148	450	380	70	93
1542		19.2	4.8	250	465	26	70	195		56	113
1543		19.6	5.2	240	480	26	73	275		60	
1544		18.2	4.8	225	405	26	68	270		56	98
1564		16.0	3.6	270	390	26	130	405	525	103	
International Cement.											
1538		11.6	5.2				375	600	668	156	173
1539		19.2	6.4				340	597	655	143	162
1540		19.2	5.0				290	630	730	120	172
1541		19.8	7.0				320	667	743	170	154
1552		16.8	5.4				155	585	540	180	227
Northampton Cement											
1908.											
1580		21.8	7.6				98	382	630		
1581		23.0	7.2				79	350			
1582		22.8	6.8								
1583		22.8	7.0								
1584		23.0	7.0					320	475		
1587		22.0	7.4					270	570		
1600							80	427	645		
1602								315			
1603								370			
1605								385			
Eckshaw Cement.											
1636							230	600	648	146	255
Lehigh Cement.											
1908											
1402	2.992	18.8	7.4	90				450	730	130	175
1585		24.0	9.4					280	540		
1586		24.4	10.0					340			
1590							85		445		
1593							75		430		
1601								70			
1606								172			
1607								325			
1610		19.2	6.4					333			

CITY TESTING LABORATORY.

No.	Sp. G.	Fineness		Setting		Per cent.	Strength			Sand Test	
		200	100	In.	Fin.	Water	1d.	7d.	28d.	7d.	28d.
Alpena Cement.											
1908.											
1423		37.6	15.6	135		24	200	270	710	125	200
1424		26.0	13.2	90	150		190	483	540	233	255
1425		31.4	17.0	180	180	24	200	533	700	115	260
1426		30.4	8.6	150	210	24	265	530		100	
1427		29.6	9.2	150	180	24	255	535		90	
1428		19.4	6.8	150		24	285	515		100	
1429		29.2	10.0	120		24	250	510		80	
1430		27.2	8.4	60	60	24	305	553	625	82	195
1431		27.8	8.8	45	90	24	430	525	563	74	210
1432		30.8	10.0	65		24	190	460	540	110	180
1433		28.8	10.0	60	90	24	213	520	570	100	160
1434		29.8	9.2	165		24	305	570	570	115	100
1435		29.4	9.2	O.K.			250	625	550	130	105
1436		30.0	5.7				213	405	620	110	115
1437		29.0	10.0				200	450	680	97	110
1438		28.8	9.0				210	540	670		120
1439		30.00	10.4	85		24	233	517	608		140
1440		28.2	9.2	80		24	244	485	680	153	183
1447		30.0	10.0	140		24	308	535	545	85	185
1448		30.4	10.4	155	60	24	318	495	675	100	170
1449		30.4	10.0	145	60	24	253	450	555	85	180
1450		29.4	10.4	195	165	24	245	540	500	130	175
1451		29.0	9.4	150	195	24	190	465	600	115	200
1452		31.2	11.0	135	195	24	312	500	565	115	
Vulcan Cement.											
1908.											
1484		20.8	6.8	170	380	24	275	357	810	100	195
Monarch Cement.											
1524		19.2	9.0	60	330	27	92		382		173
1525		20.8	6.0	120	330	27	123		462		135
1529		26.0	9.6	70			135	435	462	90	77
1530		16.6	4.8	60			120	425	400		
1531				45			200	460	405		
1532		17.8	8.0	45			150	465	450	75	99
1533		15.0	7.6	135	375		120	200	550	100	128
1534		22.8	12.0	120	330		135	400	450	85	118

CITY TESTING LABORATORY—Continued

Summary of Analysis of Coal Used at the High Pressure Plant.

No. Samples	Dealer	H 20	Ash.	F.C.	Vol.	B.T.U
Bituminous Slack.						
86	Harstone	1.7	11.8	55.8	31.0	12425
23	Wpg. Supply ..	2.7	12.6	53.9	30.9	12147
9	Western	1.8	8.9	55.2	34.1	12859
Lignites.						
3	Pinto	29.1	13.7	23.9	23.0	6380
9	Bienfait	22.8	14.8	29.2	29.4	7280
5	Roche Peerce .	23.7	9.9	35.0	31.3	7701

CITY TESTING LABORATORY—Continued

FLUXING OILS.

Summary of Tests Made During 1908.

No.	Name	Sp. G.		Flash	Burn	Loss on Heating		F.C.	Sol. CS 2	Ash.
		G.	B			1h. 212	7h. 325			
91	P. Residium . . . . .	.930	20.3	460			4.5			
92	Calif. Flux. . . . .	.986	12.0	300			7.6			
93	P. R. 19-21. . . . .	.929	20.8	395	460		6.2	3.4		.02
94	" " . . . . .	.929	20.8	415	475		5.3	3.6		.06
95	" " . . . . .	.930	20.4	410	475		3.8	3.3		.03
96	" " . . . . .	.930	20.5	410	480		6.7	3.6		.10
97	" " . . . . .	.958	19.1	400	510	.22	11.04	3.8	99.7	.12
98	" " . . . . .	.930	20.5	410	480	.26	8.4			
99	" " . . . . .	.930	20.6	410	490		9.2	3.4		
100	" " . . . . .	.925	21.0	405			7.6			
101	" " . . . . .	.921	22.0	400	470	1.05	5.4			

SUMMARY OF LUBRICATING OILS, 1908

No.	Names	Dealer	Sp. G	B. deg.	Flash.	Burn	Viscosity	Cold	Loss 325,400
31	Arct. L. Eng.	I. O. Co.			420				
32	Marine Valve	"			505			27	
33	Standard Gas Eng.	"			530		90 at 75Deg.	19	
34	Extra Engine	"			465		70 "	19	
35	600 W. Cylinder	"			530		75 "	28	
36	Bearsarge Engine	"			440				
37	Solar Red	"			435		75 "	18	
38	Atlantic Red	"			425		70	22	
39	Renown	"			420				
40	(Special Sample)				440			17	
41	Visco Can. O. Co.		.866	31.5	385	440		29	
42	Viscosoline	McC. Bros.	.869	30.8	380	440			
43	Renown	I. O. Co.	.888	27.5	485	570			
44	Arctic	"	.891	27.0	390	460	43 at 75D		
45	Atlantic Red	"	.866	31.5	375	450			
46	Lard Oil	"	.907	24.2	380	465			
47	Turbinoline		.915	23.0	395	460			
			.909	25.5	512	610			

SUMMARY OF LUBRICATING OILS, 1908

No.	Name	Dealer	Sp. G.	B. deg.	Flash.	Burn	Viscosity	Cold	Loss
48	Eclipse	McC. Br.	.897	26.0	318	378	60 at 75D		
49	"		.905	24.5	360	430			
50	Arctic		.864	32.0	370	430	18 "		
51	Cylinder		.897	26.0	490	600	135 at 80		
52	Viscoline		.900	25.7	530	600	45 at 60		
53	Arctic	"	.867	31.5	370		23 at 90	24	
54	Viscoline	"	.895	26.5	460	550	115 at 75	27	
55	Turbinoline	"	.893	26.8	510	610	20 " 250		
							70 at 115	33	1.7 %
56	"	"	.889	27.5	485	620	14 " 350		
							68 " 115	35	1.7
							20 " 250		
57	Eclipse	"	.907	24.1	390	470	13 " 350		
							60 " 68	21	3.25
							41 " 100		
58	"	"	.907	24.1	380	470	18 " 200		
							60 " 68	20	3.3
							40 " 100		
61	Riga Valve	W. O. Co.	.889	27.5	555	610	18 " 200		
							135 " 100		1.13
							75 " 200		
62	" Dark Cyl.	"	.900	25.5	585	660	40 " 300		
							100 " 100	24	.92
							90 " 200		
							40 " 300		
63	Riga Dynamo	"	.864	32.0	450	500	70 " 100		
							35 " 200		
							30 " 300		

CITY TESTING LABORATORY
SUMMARY OF LUBRICATING OILS, 1908

No.	Name	Dealer	Sp. G.	B. deg.	Flash.	Burn	Viscosity	212	Loss 325	450
64	Rega	W.O. Co. M. Eng.	.945	18.0	400	466	155 at 100 55 " 200 35 " 300	.37	2.65	21.8
65	Rega	"	864	32.0	445	500	70 " 100 35 " 200 30 " 300	.1	1.7	13.0
66	Viscosoline	McC. Br.	.890	27.2	525	595	165 " 100 65 " 200 40 " 300	.2	.366	2.46
67	"	"	.890	27.2	520	595	165 " 100 60 " 200 40 " 300	.19	.429	2.0
68A	Turbinoline	"	.900	25.5	390	475	35, 34 at 68			
68A	(Duplicate of 65)	"	.900	25.7	395	475	35 at 68			
68	Ecupse	McC. Br. Eng.	.900	25.5	415	485	60 " 68			
69	Cylinder	"	.895	26.2	535	620		.61	2.86	7.5
70		I. O. Co.	.905	24.6	375					
71	Turbinoline	McC. Br.	.879	29.6	410	480	135 at 100 28 " 250 55 " 100			
72	Viscosoline	McC. Br.	.883	27.8	480		45 " 250 150 " 100 30 " 250			

TABULATION OF REPLIES FROM EUROPEAN CITIES REGARDING ASPHALT & WOOD BLOCK PAVEMENTS.

Name of City	Have you had opportunity of comparing St. asphalt & wood pavement under heavy traffic	Kind of Wood and Treatment	Average Life of Wood	Average Life of Asphalt	Cost of Maintenance	Ease of Traffic	Cleaning	Sanitation	Noise	Foothold
Berlin	Yes	Australian hardwd. Creosoted soft wood	10-11 years.	About 19 yrs.	W. more expensive					
Birmingham	No	Hard wood	9-10 years	14-15 years.	W. more ex.	A. best..	A. best..	A. best..	W. best..	W. best..
Brussels	Yes	Creosoted blks.	3 years	14 years	Wood 50	Same....	A. best..	A. best..	W. best..	W. best..
Buda Pesth	Yes	Creos. soft wood	10 years	18 years	A. 25-40	A. best..	A. best..	A. best..	W. best..	W. best..
Frankfurt A.M.	Yes	Creos. soft wood	7 years	10 years	W. more ex.	A. best..	A. best..	A. best..	W. best..	A. best..
Glasgow	Yes	Australian hardwd.	10-12 years	10 years	A. more ex.	Same....	Same....	A. best..	W. best..	W. best..
Leipzig	Med. traffic	Australian hardwd.	15 years	15 years	W. more ex.	A. best..	A. best..	A. best..	W. best..	W. best..
Liverpool	Med. & light traffic	Resinated creosote soft wood.	Med. traffic	Heavy traffic	Norecord	Same....	A. best..	A. best..	Same....	W. best..
Lyons	No	Australian hardwd.	12-15 years.	8 years	Wood 50					
Manchester	No	Creos. soft wood	8 years	15 years	Asphalt 40					
Munich	Yes	Australian hardwd.	Over 12 yrs.							
Newcastle	No	Creos. soft wood	8 years							
Nottingham	No	Creos. soft wood	Med. traffic							
Stockholm	No	Creos. soft wood	Med. traffic							

REMARKS

Berlin—While wood so far is considered satisfactory, it has not been in use long enough to express decided opinions as to its comparative merits.

Brussels—Asphalt pavement cost about 30c. per square yard per annum.

Buda Pesth—Try to avoid use of wood blocks wherever possible.

Frankfurt—Wood paving only used when gradient is over 1:60.

Manchester—Wood pavement employed only at churches. Team owners object to it on account of its slipperiness.

NOTE.—A. "Asphalt."
W. "Wood."

TABULATION OF REPLIES FROM AMERICAN CITIES RE ASPHALT AND WOOD BLOCK PAVEMENTS.

Name of City	Have you had opportunity to compare asphalt and wood under heavy traffic	Properties of Blocks	Average Life of Wood	Average Life of Asphalt	Comparison Cost of Maintenance	Ease of Cleaning	Ease of Traffic	Sanitation	Noise	Foothold
Baltimore.....	Yes.....	16 to 20 lbs. per c.f.....	5-10 years ..	10-14 years ..						
Buffalo.....	Yes.....	Unprepared.				A. best...	Equal....	A. best...	W. best...	Wood very slippery in wet weather
Chicago.....	Yes.....	16 per c.f.....				A. best...	Equal....	A. best...	W. best...	Equal...
Galveston.....	No.....	12 lbs.....	Blocks unsatisfactory....			A. best...	Equal....	A. best...	W. best...	W. best..
Grand Rapids..	Yes.....	Creosoted ..	12-15 years ..	12-15 years ..	W. best...	Equal....	Equal....	Equal....	W. best...	A. best..
Indianapolis ..	Yes.....	5-6 lbs.....	15-16 years ..	15-16 years ..	W. best...	W. best...	Equal....	Equal....	Equal...	A. best..
Kansas City ..	Yes.....	16 lbs.....			A. best ..					A. best..
Minneapolis ..	Yes.....	12 lbs.....	10 years.....	Less than 10	W. best..	W. best...	W. best..	W. best..	W. best..	W. best..
New York.....	Yes.....	20 lb creosote and resin ..			W. best..	Equal....	Equal....	Equal....	W. best..	W. best..
San Francisco ..	Yes.....	No type of w	ood block has proven satisfactory ..			Equal....	Equal....	Equal....	W. best..	A. bestwet
South Bend.....	Yes.....	Creosoted ..	Over 10 yrs.	15 years	W. best..	Equal....	W. best..	Equal....	W. best..	Equal...
Springfield ..	Yes.....	21-22 lb creosote & resin ..								
Toledo.....	Yes.....	16 lbs.....	Over 7 years ..		W. best..	W. best..	W. best..	W. best..	W. best..	A. best..
St. Louis.....	Yes.....	20 lbs.....	Wood is considered very expensive		W. best..	A. best..		A. best..	W. best..	A. best..
Toronto.....	Yes.....	Creosote and carbolic ..	6-10 years ..	12 years		A. best..	Equal....	A. best..	W. best..	

